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178.2

THE
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OF ELITE
4K TVS

DSLRS
TAKING THE
FIGHT TO
MIRRORLESS

WEARABLES:
BEYOND
SMARTWATCHES

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Time to Dad up.

MONDAYS AT 8.20PM

YOUNGER
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NERDS ARE COOL.

Not that we didn't already know that, but back in January 2016, there was a widely circulated Facebook comment by a grandmother who was suggesting that her granddaughters should "date the nerd in school" because he may turn out to be the next Mark Zuckerberg.

This prompted a reply by the real Mark Zuckerberg, who wrote, "Even better would be to encourage them to *be* the nerd in their school so they can be the next successful inventor".

This piece of advice, in my opinion, set the tone this year for nerds everywhere, both male and female. It is also the inspiration for a major feature story in this issue of HWM. You see, nerds aren't just inventors, they're also cultural mavericks. Today's tech companies and startups are at the forefront of changing traditional office culture and rewriting the boundaries of the cubicle workforce. If you identify yourself as such, you'll be glad to know that your future office can literally be a playground for ideas.

January also saw the conclusion of the Consumer Electronics Show 2016 in Las Vegas, where we got to preview the next wave of consumer technology that should be arriving in the coming months. As usual, we've waded past the deluge of incremental upgrades and minor enhancements so you don't have to, focusing on the key trends and industries that we think will make the most impact this year. You'll find this report in this issue of HWM as well.

Zachary Chan
EDITOR

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SINGAPORE HWM

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NEW THIS MONTH

■ Every month, we receive dozens of product announcements and mentions, sit through many a launch event and try out all kinds devices. All these products are then carefully curated by our crack team of tech gurus. The final list is presented here in Gear and it is our hope you'll find something to geek-out to.

MORE INSIDE >

CASIO EX-FR100
Personal outdoor recorder? The new freestyle camera is here.

ROMAIN JEROME SUPER MARIO BROS. WATCH
Luxury analog watch for the affluent geek.

SENNHEISER HE/HEV 1060
Audio meant for you to escape from the harsh noises of the world.

STEAM CONTROLLER

In a move to evolve the standard console controller, the Steam Controller features dual trackpads with haptic feedback which are actually configurable, and can be customized to suit any game that supports the Steam Controller. The dual trackpads can function as a mouse, digital buttons or even as macro keys as you, the gamer, ultimately determine their purpose.

COOLER MASTER XORNET II

The Cooler Master Xornet II builds on the compact, claw-grip design of the original Xornet, all while packing upgrades like a 3,500DPI Avago 3320 optical sensor, lift-off distance tuning, and a surface calibration tool. The RGB-illuminated scroll wheel can display 16.8 million colors, and you can assign a color to one of three custom DPI steps so you'll always know your current sensitivity. Two programmable side buttons add additional functionality, while the rubber side grips and ergonomic shape ensure comfort.

CASIO
EX-FR100

Casio is bringing freestyle photography up another notch with the EX-FR100, with a larger 3-inch touch LCD on the control unit, and a new dual-core HS Engine 3 processor, which allows for up to 30fps continous shooting rates, and the ability to record Full HD video. What's also impressive, is that the water resistance has been upped to IPX8 standards, meaning you can swish around with it in water up 1.5meters deep for up to 60 minutes.

HP SPECTRE X2

The HP Spectre x2 is a 2-in-1 convertible notebook, which can be used as a tablet or alongside its travel keyboard. It features a Full HD (1,920 x 1,080 pixels) 12-inch display, an Intel Core M Skylake processor, along with up to 512GB SSD storage and runs on Windows 10. It has two USB Type-C connectors, as well as a Type-C to Type-A (current standard USB port) adapter.

BOSE
SOUNDLINK
MINI II

The SoundLink Mini II is Bose's portable audio solution that fits nicely into your backpack. It weighs just 0.67kg, measures at 5.1 x 18.0 x 5.8cm, and offers a whole ten hours of battery life so you can have uninterrupted music for your entire work day. It also remembers up to six devices, so pairing is always a quick and simple affair.

UNITE WARRIORS DEVASTATOR

If you grew up watching the classic Transformers G1 cartoons, you'll undoubtedly know who this massive fella is. The latest iteration of Devastator is a must have for any 80s kid, featuring all five individual machines in their most detailed incarnations yet. At nearly 46cm tall, this is one of the biggest Transformers product yet, dwarfed only a handful of larger toys.

ROMAIN JEROME SUPER MARIO BROS.

This limited edition watch comes in a 46mm wide PVD-coated black titanium case and has a three-dimensional dial that features Mario and a power-up mushroom made out of colored enamel. Underneath, an automatic movement beats at 4Hz with a 42-hour power reserve. Limited to just 85 pieces, at a cool CHF15,555 (~$22,000).

ASUS ROG MAXIMUS VIII FORMULA

This flagship Z170 board features ROG Armor that covers most of the PCB in a sleek, protective shroud that matches the VRM and PCH heatsinks. Translucent panels on the ROG Armor are also tastefully illuminated by customizable RGB LEDs. For easier water-cooling setup, G1/4 threaded fittings are built into the integrated CrossChill EK hybrid cooling block.

LOGITECH G933 ARTEMIS SPECTRUM

The G933 is one snazzy gaming headset. With 16.8 million-color lighting, modular backlit speaker plates, and programmable buttons, you can customize it to your heart's content. You can also tweak audio settings to create unique sound profiles for different game and music genres. It also has Dolby and DTS Headphone: X support.

SPHERO BB-8

Though multiple versions of the droid exist, the Sphero version, at US$149.99, is the most expensive and impressive. While not to scale, the Sphero BB-8 can take orders from its app, allowing you to task it, control it (via voice or app) and record videos. It doesn't have the lighter accessory or electro-shock arm like it does in the movie though.

SENNHEISER
HE/HEV 1060

Sennheiser's Orpheus headphones have just been made even better. Hand-crafted to order, the HE/HEV 1060 are matched with an amplifier sitting on a bed of solid high density Carrara marble which protects the vacuum tubes from structure-borne noise and vibrations of the outside world. Nothing but the best components are used, acheiving an audio range of 8Hz to more than 100kHz.

PLAY, CHARGE AND STAY CONNECTED

Take charge of power, play and connection with PROLiNK's latest gadgets.

CHARGE UP TO FIVE DEVICES AT THE SAME TIME

The PROLiNK PCU5081 5-Port USB Charger can deliver a true total charging output of up to 8.0A, which supports devices like tablets, smartphones and power banks. IntelliSense technology automatically distributes the right amount of charging current for your connected devices. The PCU5081 is designed for safety; with protection against short circuits, over-heating and overload.

PCU5081 5-PORT USB CHARGER WITH INTELLISENSE

ENJOY PORTABLE INTERNET SPEEDS OF UP TO 150MBPS

The PRT7007L Portable 4G LTE Wi-Fi Hotspot is a treasure for staying connected on the go. This compact device is able to attain top speeds of 150Mbps, with concurrent dual-band technology to deliver data quickly on the 5GHz frequency. Automatic Network Selection connects to a network easily without any complicated configurations, and multi-user support lets you connect up to 15 clients, all at the same time.

PRT7007L PORTABLE 4G LTE WI-FI HOTSPOT

LIGHT UP THE BATTLEGROUND

The PMG9003 Fulvus Illuminated Gaming Mouse lights up the battleground with its seven-color breathing LED lights. A 2,400dpi optical sensor provides elite-level performance, with a frame rate of up to 3,000 times per second, tracking speed of 28 inches per second, and a four-level quick switch DPI button. An ambidextrous design lets you game comfortably, no matter which fist you battle with.

PMG9003 FULVUS ILLUMINATED GAMING MOUSE

FAST-CHARGING BATTERY FOR STABLE POWER

The SFC series is a single-phase input/single-phase output Line-Interactive UPS system with PROLiNK's newest Super-Fast Charging (SFC) technology. SFC lets you recharge the battery back to 90% of its capacity within three hours, making it ideal as stable power backup for homes and small offices. An integrated 3-step AVR prevents brownouts and over-voltage surges, and the unit comes with universal sockets for use with a wide range of devices.

PRO1201SFCU SUPER-FAST CHARGING LINE INTERACTIVE UPS 1KVA

SIMULTANEOUS SYNC AND CHARGE
SMARTER... STRONGER... FASTER!

PUH303 4-Port Smart Charge & Sync Hub

All 4 USB3.0 ports allows for both data transfer (up to 5Gbps) & charging of devices concurrently

Supports up to 4A / 20W of total charging output

Patented Bus-Powered Technology allows connections up to 4 units of heavy duty USB devices

Features
- USB 3.0 ports • No external power adapter required
- Rapid charge feature • 4A total charging output
- Autosense technology • Plug and play

NO POWER ADAPTER REQUIRED

PATENTED TECHNOLOGY

Plug & Play

5Gbps USB 3.0 SuperSpeed

FACEBOOK   TWITTER   YOUTUBE   WEBSITE

BUILT FOR OVERCLOCKING

The EVGA GeForce GTX 980 Ti Kingpin has been built with overclocking in mind. It boasts a 14+3 digital power phase design and a whopping three power connectors – two 8-pin and one 6-pin – to supply it with even more power for extreme overclocks. How extreme? This is the card that achieved up to a 2,200MHz core clock on liquid nitrogen cooling! A physical switch lets you toggle between one of three integrated BIOS to experiment with different overclock settings.
EVGA GeForce GTX 980 Ti Kingpin

EXPAND YOUR IPHONE'S STORAGE

The PQI iConnect Mini Lightning flash drive's one-button backup function allows you to quickly copy all your photos and videos from your Apple device. When the iConnect Mini is connected, your iPhone will automatically save all images and videos to it. So if you're out of storage space, there's no need to scramble to choose which photo to delete. It also supports Apple's Touch ID security, so no one else can access your data.
PQI iConnect Mini

THE MOUSE WITH THE LED DISPLAY

While the Sentinel III has other things going for it including a button modifier that effectively doubles available buttons (from 8 to 15), 6,400 DPI and an easy to use customization suite, the mouse will undoubtedly draw the most attention due to its interesting use of LEDs. Situated right in middle of the mouse is an LED display that can show you the current settings of the mouse or display a 32 x 32 pixels image.
Cooler Master Sentinel III

BUILD YOUR OWN RIDE

The Infento build kit allows you construct your very own self-powered rides. There are three main kits to choose from; Junior, Creator and Master Creator. What's more, you can even get junior involved in your Infento projects for some family fun! Its main goal is to do away with the need to buy new rides for your child as he grows. Infento rides can be customized for your child, even as he reaches his teens!
Infento

QUICK CHARGE ON THE GO

Packing a 12,000mAh lithium polymer battery, the Michi Slim 12000 QC is one of the few power banks in the market to support Qualcomm's Quick Charge 2.0 standard. Sporting one USB output that supports Quick Charge and another at up to 2.1A, it provides fast charging to both Android and iOS devices. Priced at $89, it's also one of the more affordable Quick Charge-certified power banks around. **Michi Slim 12000 QC**

SPEED MATTERS

This particular G.Skill memory kit is one of the fastest 64GB kits out there by far. Each 16GB module is assembled with Samsung ICs and features impressive CAS latencies of 14-14-14-35. They are also clocked up to DDR4 3,200MHz each and come with built-in Intel XMP 2.0 profiles for faster overclocking. As part of G.Skill's premium Trident Z series, they also feature a single-piece heatsink for more efficient heat dissipation and a lovely brushed metal design. **G.Skill Trident Z DDR4-3200MHz 64GB**

A3+ PRINTER THAT CAN PRINT ON A VARIETY OF MEDIA

Epson's SureColor P407 is the printer that does it all. The 13-inch, A3+ printer can print on a wide variety of media (such as canvas and glossy paper) and is designed especially for photography enthusiasts and hobbyists. It uses UltraChrome HG2 pigment ink, comes with USB 2.0, 802.11n2 and Ethernet support and also supports printing via Epson's i-Print app. **Epson SureColor P407**

ONLY WHAT YOU NEED

The Corsair Katar is a compact, ambidextrous mouse for the minimalist gamer. It stays focused on the essentials with just four programmable buttons, an 8,000dpi optical sensor, and onboard memory for storing your custom profiles. Textured rubber side panels help improve your grip, while its light weight – only 85g – is good for those who favor less resistance while swiping. **Corsair Katar**

DESIGNED FOR OVERCLOCKERS

This custom take on NVIDIA's GeForce GTX 980 Ti card is designed to have its limits tested. With features that enable you to defrost the card's memory during sub-zero overclocking and a one-click Safe Mode to restore the card's BIOS to its original settings, ASUS is ensuring that overclocking is as fuss-free as possible. The card also boasts 10mm heatpipes for better cooling and a whopping 14-phase power design. **ASUS Matrix GTX 980 Ti**

TOYS TO LIFE

Disney's 3.0 edition of their Infinity line is arguably the best evolution of their series yet. Utilizing physical toys that you can then scan into the game as playable characters, the game draws upon a myriad of Disney licenses, including Marvel and Star Wars. The newly included Star Wars characters (for the 3.0 version) only serves to mix things up with new gameplay styles, as well great new playsets based on the Clone Wars, original trilogy and The Force Awakens. **Disney Infinity 3.0**

CONTACTLESS THERMOMETER

The Withings Thermo is an advance thermometer that can tell a person's temperature without even being in contact with body via its infrared sensors. Just focus it on the temporal artery at the side of the head and it can take the temperature of the person in just two seconds, all while taking into account skin heat loss and ambient temperature. **Withings Thermo**

DISTINCTIVE 360 SPEAKER

The Samsung WAM7501/XS might not look like a traditional speaker but it delivers in every aspect. It's wireless, unobtrusive (it can be hung from the ceiling or paired with an optional stand) and delivers great sound to boot. Even better, due to Samsung's patented Ring Radiator technology, it outputs sound in a 360-degree radius, which means no matter where one stands, the sound from the speaker will still be as clear as if you're standing right in the front of it. **Samsung WAM7501/XS**

A NEW MODULAR MONITOR

Lenovo's newly announced ThinkVsion X24 Pro isn't just a 23.8-inch monitor with a Full HD (1,920 x 1,080 pixels) resolution with a RealSense 3D camera and Stereo 3W speakers, it's also one of the first monitors we've seen that can be expanded upon with extra accessories. One of them is a WiGig bar, which allows you to add WiGig functionality while another revealed add-on is a wireless charging station. **Lenovo ThinkVision X24 Pro**

NOT YOUR TYPICAL WEARABLE

The Leatherman Tread is a wearable tool kit that fits around your wrist. It's probably the world's first wearable tool kit. The Tread wraps around your wrist like a thick bracelet and consists of 29 tools. It includes Allen wrenches, screwdrivers and box wrenches. It even has a SIM card tool to let you pop out your smartphone's SIM card tray. The Tread is certainly one stylish looking toolkit! **Leatherman Tread**

THE BEST CONTROLLER YOU CAN PROBABLY BUY

Microsoft's Xbox Elite controller is meant for the ultra hardcore gamer. It might look like a traditional Xbox One gamepad, but every facet of it is customizable, all the way down to the individual triggers on the back. The controller is meant to be adaptable with any genre, just by swapping out a few of the modular parts. Playing racing games and think the triggers don't give you the control you need? Swap in a pair of specialized pedals that hook up to the controller instead. **Xbox Elite Controller**

A MID TOWER WITH IMPRESSIVE SPACE AND COOLING

If you're building a gaming desktop rig, chances are keeping it cool is one of your top priorities. Whether you're going to be using traditional air cooling or liquid cooling, the most important thing is fitting them all into the casing. The BW-9000-W mid-tower should be one of the options you're looking at. It not only features 3 different built-in fans, but also spaces for radiators, CPU coolers and even dust covers for the exhausts. **Sharkoon BW-9000-W**

PICTURES LENOVO, LEATHERMAN, SHARKOON, XBOX

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PICTURES LENOVO, LEATHERMAN, SHARKOON, XBOX

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FROM PEN TO COMPUTER

If you've ever wished you could instantly transfer your sketches and scribbles to the computer in a form that could be directly edited, then wish no more. The Stylograph is a pen and notebook set that reads what's being drawn on the special paper in the notebook, and transfers it to an app on your smartphone which then converts the writing or drawing into editable formats you can use on your computer. **Oree Stylograph**

STUDIO SOUND IN YOUR PALM

If you've been searching for an easy way to improve the audio coming from your smartphone, then the Chord Mojo is the way to go. This compact, battery powered DAC literally fits in your palm. The Mojo uses the new Atrix-7 FPGA chipset and supports all the major high resolution formats including DSD 256. Best of all, it supports up to two headphones so a friend can get in on the fun too. **Chord Mojo**

GET LINKED

Do you have an older pair of speakers you wish you could connect to wirelessly? Perhaps you'd like to watch a movie on your TV without having to wake the family. The Level Link solves these problems by offering a fuss-free way to add Bluetooth capabilities to any device. Better yet, it supports dual streaming so both you and a friend can get into the wireless fun. **Samsung Level Link**

GUITAR HERO FOREVER

After being MIA for five years, Guitar Hero is back with what's arguably the best entry in the series. The guitar controller is much more intuitive now as well but the best part is that new songs are constantly being added to the game via the GH TV mode, for free! You'll never need to pay for a song pack ever again and Guitar Hero Live goes for being a has been, to a bona fide superstar. **Guitar Hero Live**

ALL OF MARVEL'S PHASE TWO MOVIES IN ONE PACKAGE

Picking up where their Phase One set left off, Marvel's Cinematic Universe: Phase Two set packs relatively the same amount of materials, guaranteed to make the hardcore MCU fan drool. All the Phase Two movies (from Iron Man 3 to Ant-Man) are include, along with an exclusive bonus disc, as well as a 1:1 scale replica of the Morag Orb, which contained the Power Gem from Guardians of the Galaxy. **Marvel Cinematic Universe: Phase Two**

A MOVING R2-D2 FRIDGE WITH A 720P PROJECTOR

If the BB-8 droid is too small for you, the R2-D2 Moving Refrigerator should satisfy your need for big Star Wars products as well as your thirst! It may seem like a novelty, but the R2-D2 fridge is a working fridge, able to store up to 6 drink cans, while keeping them cool. On top of that, it even comes with a built in 720p projector so you can relive the Star Wars saga with a chill glass of Blue Bantha Milk. **Star Wars R2-D2 Moving Refrigerator**

FASHIONABLE AUDIO

The Sudio Vasa Bla is a pair of wireless in-ear headphones that boast a hint of fashion sense to go with a large dose of audio quality. Said to be driven by a carefully tuned driver and amplifier pair, these in-ears have a frequency response of 18Hz to 23kHz and an impedence of 32 Ohm. They weigh just 22g, and have a battery life of 8 hours, perfect for that day out at the mall. **Sudio Vasa Bla**

CLASSIC, TRADITIONAL NOTEBOOK WITH SOME OOMPH

The new HP Envy is a 13.3-inch notebook that comes with either a Full HD or Quad HD display, Skylake processors and up to 256GB storage.Utilizing a special profile and elevated hinge, the machine offers users a more stable and comfortable typing experience, while also maintaining a cool operating temperature throughout. **HP Envy**

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SINGAPORE'S ORIGINAL OBSTACLE RACE IS BACK!

Face off against the toughest obstacles you'll find – climb, jump, crawl, swing and do what it takes to make it to the finish line!

Registration opens now for men and women. All participants will receive an attractive race pack worth $150, including an adidas race T-shirt!

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**OBSTACLE 1
MAZE RUNNER**
Crouch, duck and crawl your way out of the maze.
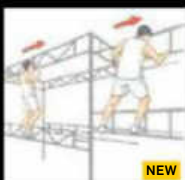
**OBSTACLE 2
SIDE WALK**
Be a Spidey and manoeuvre sideways across the frames.

**OBSTACLE 3
LATERAL MOVE**
Power through two sets of parallel bars.
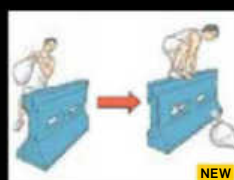
**OBSTACLE 4
LIFT 'N' LOAD**
Carry a 20kg sandbag over barricades.

ARE YOU READY TO CONQUER THESE AND MORE?

CES 2016

The annual Consumer Electronic Show in Las Vegas sets the pace of tech trends throughout the rest of the year. After clocking tens of thousands of steps at the show floor in between countless meetings and demos, we present to you the top trends to look out for in 2016.

Text by *Team HWM*
Art Direction by *Ken Koh*

MORE INSIDE>

STEFAN SCHULTZ, LEICA
Digital technology has turned the modern camera into a specification race where photos are a cheap commodity. Leica plans to put craftsmanship back into play.

CHUA I-PIN, POLYCOM
The workplace of the future is not open-concept or hotdesking, but the ability to bridge presence with performance.

WARPING WEARABLE TECHNOLOGIES

The right wearable is all about finding the correct playing field, and currently, the rules are not set in stone.

by *Liu Hongzuo*

The latest announcements at CES 2016 got us thinking about the direction of wearables at large. Huge brands are now jumping into the second wave of smart-things, emulating the moderate success stories and trends of last year's releases. At the same time, wearables have taken a rather strange turn, going beyond what was seen as the holy grail when someone slaps every conceivable perk and feature onto a part of the human body that was mostly unclaimed by gadgets for the last decade. So what are the trends that points towards the evolution of wearable technology – for better or for worse?

Not just smartwatches

One of the directions these electronic giants are going with wearables is to venture beyond the smartwatch form factor. While the concept has been bounced about by hopeful Kickstarter entrepreneurs for a good year or three, brands like Samsung are beginning to pick up on introducing smartclothes at CES 2016. While it is a first attempt in the mainstream market, they can be useful like the Samsung Body Compass – athletic-wear that lets you track all those fitness stats more accurately, right down to your fat levels and stance. They can also be quite mundane, like the Samsung Smart Suit, an NFC-enabled suit that does redundant things like exchanging digital name cards (when physical ones suffice) in a suit. We're also not forgetting the quirky ones, like the unfortunately-named Samsung Welt (wellness belt) that comes with sensors to track your waistline, eating habits, steps taken, and sedentary periods, all while being able to give wiggle room during a heavy meal.

These examples actually hold some merit to what wearables should evolve into. We believe that it's not enough for a team of smart engineers to pile a bunch of re-hashed features on an accessory that's blend of impressive, premium workmanship and materials. Said features and the accessory needs to add practical value to the average user, and not simply because they can get a watch with an in-built Geiger counter with voice feedback, but because it caters to people living in an age where Geiger counters are necessary for survival in an

alternate, modern reality. By this analogy, the Body Compass and Welt are practical. As the masses continue to become more informed about their health, these wearables help users to attain those health-related goals with better accuracy and convenience, all while addressing the growing need of managing your personal information.

The second wave

While wearables exploring beyond the confines of the wrist, the bandwagon that followed will inevitably begin to catch-up. Electronic titans and sports megabrands like HTC and New Balance are two of the many new entrants to the wearable market, all eager to have a slice of a highly marketable and nearly oversaturated pie. For the most part, there's not much excitement yet, since most of these new additions are actually just brands attempting to push new proprietary systems thinly veiled as showing sensitivity to a user's needs, all in the hopes of becoming the new standard in this fairly unstable field. Case in point,

the Fitbit Blaze, a full-fledge smartwatch by the company that's been making fitness bands with a variety of trackers, comes with its own proprietary operating system instead of Android Wear. Do we truly need more operating systems for smartwatches, when Android Wear itself had to open up to pairing with iPhones (like the upcoming generation of Samsung Gear S2)? We think not, even if the Blaze is indeed aesthetically appealing.

Others, like HTC and their HealthBox wearable kit adopted a slightly more sensible approach at setting foot into the market. By working together with Under Armor in developing the HealthBox, both brands take the best from their respective fields of expertise – technology and sports science – to bring a realistic option to the table.

Where do we go now?

Whichever the approach, having more competitors in the wearable field may actually be a good way to drive makers towards building something that's indispensable to our technologically-inclined lives. The evolution of wearables cannot come any sooner, and it's time to move on from building yet another smartwatch. Of course, like any free market, more brands can come by and offer something truly ground-breaking that can mark the next milestone in wearable technology, although it will be another few years before it's worth checking back again.

HOW NIKON IS NOT TAKING MIRRORLESS CAMERAS LYING DOWN

The clue in Nikon's new autofocus module.

by *Alvin Soon*

At CES 2016, Nikon announced two new DSLR cameras, the FX flagship D5, and the DX flagship D500. From the outside looking in, anyone might assume that it's DSLR business as usual for Nikon. But they would be wrong.

The D5 and the D500 reveal that it's not DSLRs as usual for Nikon, and that they clearly have an eye on mirrorless cameras. And the clue is in the new Multicam 20K autofocus (AF) module found on both cameras.

How mirrorless AF went from underdog to serious contender

For the past few years, mirrorless cameras have been upending ideas of how camera autofocus systems should work. Instead of using the phase-detection AF technology found on DSLRs, mirrorless cameras use contrast-detection AF technology to find and lock onto subjects.

At the beginning, this looked like a bad idea. Early mirrorless cameras suffered from slow and inaccurate autofocus. On the other hand, phase-detection AF was mature technology, and the AF systems on DSLRs were running circles around mirrorless cameras.

Fast forward to 2016, and the story has flipped around. AF systems on mirrorless cameras are doing things that DSLR cameras simply can't do, because of the latter's limitations of having a mirror-box.

For example, some mirrorless AF systems can find and lock focus anywhere within the image. DSLR cameras can only find and lock focus on specific focal points in the central area of the frame.

Mirrorless AF systems also benefit from being exposed to the scene directly through the image sensor, instead of being exposed to the scene indirectly, through light redirected via the mirror to an AF module, like in a DSLR.

This lets the mirrorless camera do neat tricks, like recognize faces, eyes, and even recognize the single eye that's closest to the lens for a precise focus lock.

To add insult to injury, many of the flagship mirrorless cameras today use hybrid autofocus systems, which combine both phase and contrast-detection AF technology together, for the speed of phase-detection AF and the precision of contrast-detection AF.

One recent example is Sony's A7R II full-frame mirrorless camera, with a hybrid AF system that comprises 399 phase-detect and 25 contrast-detect points, the widest phase-detect coverage of the frame across any full-frame digital camera today.

Nikon's new AF module is taking mirrorless seriously

To their credit, Nikon's 1 series of mirrorless cameras featured a groundbreaking AF system from its
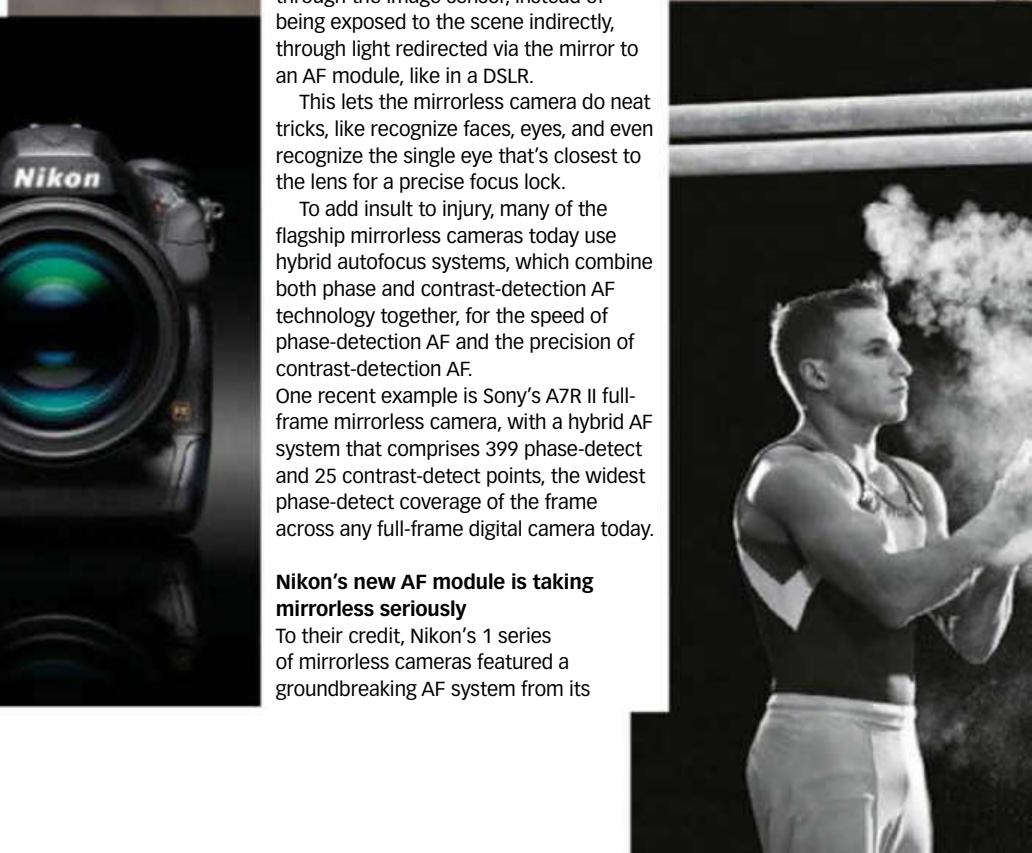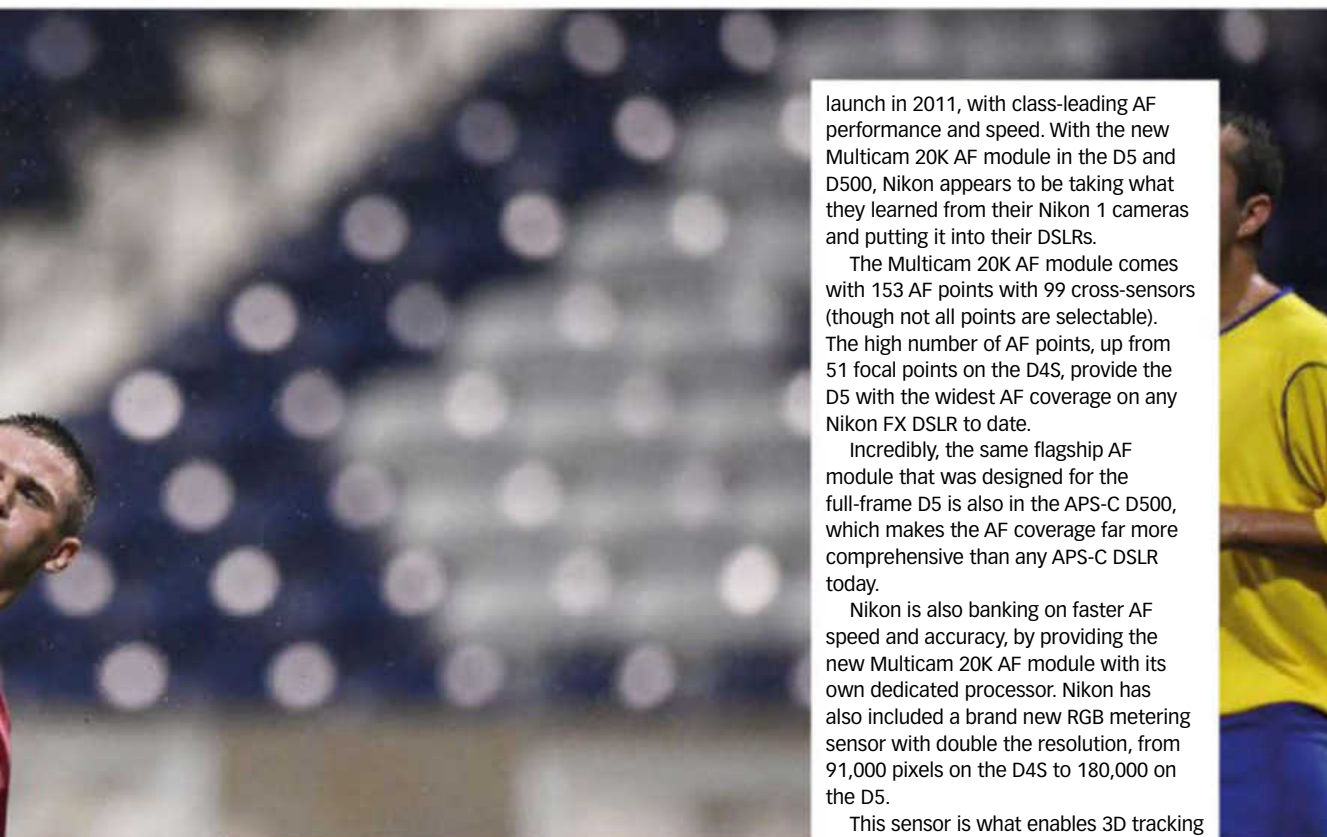
launch in 2011, with class-leading AF performance and speed. With the new Multicam 20K AF module in the D5 and D500, Nikon appears to be taking what they learned from their Nikon 1 cameras and putting it into their DSLRs.

The Multicam 20K AF module comes with 153 AF points with 99 cross-sensors (though not all points are selectable). The high number of AF points, up from 51 focal points on the D4S, provide the D5 with the widest AF coverage on any Nikon FX DSLR to date.

Incredibly, the same flagship AF module that was designed for the full-frame D5 is also in the APS-C D500, which makes the AF coverage far more comprehensive than any APS-C DSLR today.

Nikon is also banking on faster AF speed and accuracy, by providing the new Multicam 20K AF module with its own dedicated processor. Nikon has also included a brand new RGB metering sensor with double the resolution, from 91,000 pixels on the D4S to 180,000 on the D5.

This sensor is what enables 3D tracking AF on Nikon DSLR cameras (the ability to lock on and track objects moving through the frame), and the new high-sensitivity sensor should increase the D5 and D500's ability to recognize and track subjects.

Is improved autofocus enough for DSLRs to fight back?

The new Multicam 20K AF module reveals that Nikon is not ignoring mirrorless trends, and is in fact, trying to merge the best of what mirrorless and DSLR cameras have to offer, by trying to create its own hybrid version of the best of phase and contrast-detection AF abilities, if not technologies.

Is it enough to offset the drop in camera sales and the invasion of rival mirrorless camera brands? Who knows. But it's good that each system, be it DSLR or mirrorless, is trying to outdo the other. It's what leads to advancements in technology, and how we — the customers — win in the end.

THE BIRTH OF ELITE 4K TVS

What's better than a UHD TV? A UHD Premium TV, apparently.

by *Ng Chong Seng*

Last year, as TV manufacturers strutted their latest and greatest 4K UHD (Ultra High Definition) TVs at the annual CES show, something else was brewing behind the scenes. A few of them, along with some heavyweight broadcasters and movie studios also got together to form the UHD Alliance (UHDA), with the aim to forge standards for UHD. More specifically, standards for a 'premium' UHD experience.

What, isn't UHD or 4K just Full HD times four? Not quite. Despite the name, UHD no longer just means a resolution of 3,840 x 2,160. Resolution is just one aspect, and technically, it has been overcome since CES 2010.

Today, UHD also encompasses wide color gamut and HDR (high dynamic range), two important elements in our never-ending pursuit of a life-like picture quality on TV. And for the past two years, the industry collectively has been making remarkable progress on the technological side of things. For example, the infinite contrast witnessed on LG's OLED TVs, and the expanded color spectrum seen on Samsung's SUHD LCD sets, the latter enabled by quantum dot technology.

Ensuring that everyone is on the same page with UHD is basically what the UHDA hopes to accomplish. And with 35 member companies that include Dolby, LG, Netflix, Samsung, Sony, The Walt Disney Studios, 20th Century Fox, and Warner Bros. Entertainment, there's a good chance we won't witness a UHD standards war. The HD DVD vs. Blu-ray kerfuffle is still fresh on everyone's mind.

Ultra HD Premium
Like clockwork, TV makers have once again wheeled out their newest creations at this year's CES. New designs and performance improvements aside, some of these TVs (from LG, Panasonic, and Samsung) also paraded a 'Ultra HD Premium' logo, the first consumer-facing handiwork of the UHD Alliance.

Yes, in the short span of a year, the group has defined what next-gen video content is.

Broadly speaking, a TV carrying the Ultra HD Premium badge is a cut above those that don't. The display must have a resolution of at least 3,840 x 2,160
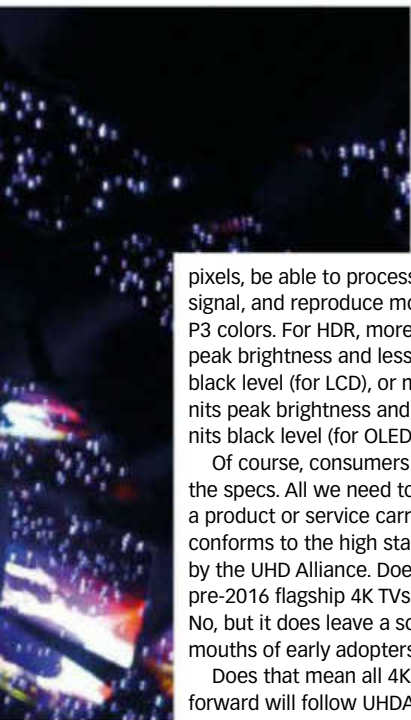
pixels, be able to process a 10-bit color signal, and reproduce more than 90% of P3 colors. For HDR, more than 1,000 nits peak brightness and less than 0.05 nits black level (for LCD), or more than 540 nits peak brightness and less than 0.0005 nits black level (for OLED).

Of course, consumers need not know the specs. All we need to know is when a product or service carries this logo, it conforms to the high standards set out by the UHD Alliance. Does that make pre-2016 flagship 4K TVs lousy overnight? No, but it does leave a sour taste in the mouths of early adopters.

Does that mean all 4K TVs moving forward will follow UHDA's specs? No to that, too, because not every 4K TV buyer is looking for a premium model. If anything, this certification aims to separate the wheat from the chaff at the high-end segment of the market.

Also, it's easy to forget that these are just the specs for TVs. The inter-industry group has also laid out standards for the distribution and mastering of UHD content. Put simply, to truly enjoy the benefits, especially HDR, a Ultra HD Premium-certified TV alone isn't going to be enough. Get ready to buy a new UHD Blu-ray player and new UHD Blu-ray discs. Or wait for compatible streams from services like Netflix. Thankfully, because the major players responsible for these are also in the UHDA, I've my fingers crossed that the wait won't be too long.

WORLD LARGEST 170" SUHD TV

MOBILITY IS KING

We are moving toward a convergence of mobility and computing power.

by *Koh Wanzi*

Faster, cooler, better. That's always been the expectation as we welcome the latest crop of laptops and gaming machines that we're told – year in, year out – are the first of their kind in some way or other. Still, the disjunction between mobility and performance has persisted over the years. There was, very simply, no such thing as a notebook that could do everything equally well.

That assumption has been challenged over the years, what with compact, portable gaming notebooks like the Alienware 13. Manufacturers like ASUS have also created compact desktop systems like the ROG G20 that tried to pack decent graphics processing power in a compact package. On the system builder front, mini-ITX cases like the Corsair Carbide Air 540 aim to provide just enough room for high-end hardware.

What all these have in common is that they've had to work around existing technology that was never expressly designed to enable smaller form factors. Yes, mobile graphics cards like the NVIDIA GeForce GTX 960M were intended for use in notebooks, but these notebooks also included bulky 17-inch models like the Razer Blade Pro. As a result, companies have often had to innovate on their own designs to accommodate the necessary hardware, but this often meant that they had to compromise on cooling and upgradeability.

But as the inexorable march of technology would have it, 2016 might be the year when everything changes. This year at CES, we saw a push to combine computing prowess and small form factors driven by several interesting developments. Although design innovation continued in the form of new graphics amplifiers and docks, there were teases of next-generation silicon and hardware form factors that had the promise of being tailored explicitly for slimmer and meaner notebooks and PCs.

Ultrabooks for serious gaming

AMD's next-generation Polaris GPU architecture will supposedly be more power efficient than ever, thanks to the new 14nm FinFET process and other improvements. But the biggest takeaway from AMD's announcement was that it wanted to allow 1080p60 gaming on compact notebooks, something that used to be the purview of larger laptops intended as desktop replacements.

And given that NVIDIA is also due to release its new Pascal GPUs in the next half year, we wouldn't be surprised to see it follow AMD's tack and announce a focus on enabling thinner and more powerful notebooks as well. Precedent certainly suggests that this is likely – this is the same company that announced that it had found a way to cram its desktop-class GeForce GTX 980 graphics card in a notebook.

Graphics card docks

But speaking of gaming ultrabooks, Razer actually just made one. The 12.5-inch Razer Blade Stealth weighs just 1.25kg, so you would not be remiss in making this your go-to work machine.

But the far more interesting part is how the notebook functions as a gaming machine via an external graphics dock. Even more intriguing is the fact that it interfaces with the notebook via a USB Type-C Thunderbolt 3 connector. Razer has no plans to make the connection proprietary, which means that any notebook with a Thunderbolt 3 port could be immensely versatile – portable ultrabook by day, gaming powerhouse by night.

Then there's the ASUS XG2 gaming dock, which works similarly, except for the fact that it requires two USB Type-C connections and works over a PCIe 3.0 x4 interface. MSI also took a similar approach with its Gaming 27XT AIO PC, which supports a rather compact external graphics dock on the rear.

Of course, there have been previous attempts at graphics amplifiers as well,

like the Alienware Graphics Amplifier and the MSI GS30 Shadow's gaming dock. But these have both been proprietary solutions locked into a specific brand, and Razer's use of Thunderbolt 3 and USB Type-C teases the possibility of the day when we could just upgrade our notebooks with a dock, effectively giving us the best of both worlds.

Smaller PCs

We also caught wind of the new mini-STX motherboard form factor from Intel. This is even smaller than the already compact mini-ITX boards, but the most compelling point is that they could enable truly customizable small form factor PCs.

ASRock already has a mini PC in the works that will utilize a mini-STX board, and the chassis will reportedly measure a scant 155 x 155 x 80mm. There are already PCs this size, just look at Zotac's Zbox series of mini PCs, but they generally feature soldered CPUs and GPUs and don't allow you to swap out much beyond the memory modules and storage devices. While mini-STX PCs will still not have space for discrete GPUs, they are a huge step up in terms of upgrade options over existing mini PCs.

Other manufacturers have also taken interest. Silverstone showcased a mini-STX case it was developing, and an engineering sample of a mini-STX board from ECS was spotted. It's still early days for all this, but it's arguably all part of a larger convergence of small form factors and performance.

That may seem like a no-brainer, but it may just be what the flagging PC market needs – a revitalizing shot from notebooks and PCs that can do it all.
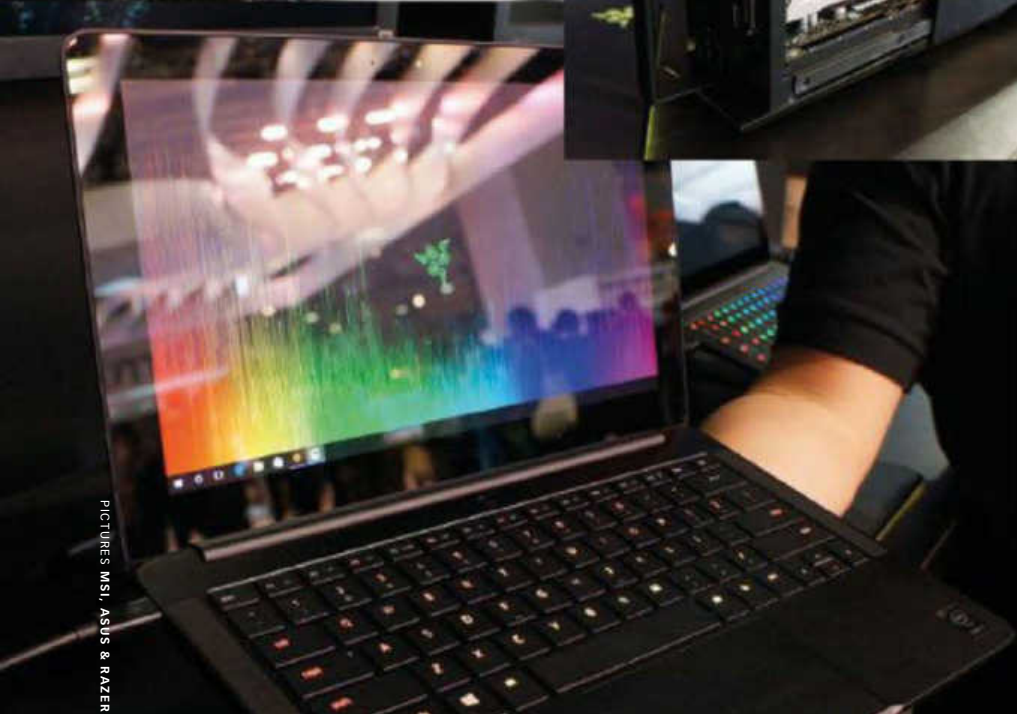
PICTURES MSI, ASUS & RAZER

"

We have to encourage companies to think of KPIs being output-based instead of presence-based.

"

Bridging together a workplace of the future

CHUA I-PIN,
MANAGING DIRECTOR,
SOUTH EAST ASIA (SEA), POLYCOM

by *Liu Hongzuo*

PHOTOGRAPHY **DARREN CHANG** ART DIRECTION **IAN CHONG**

What defines a Workplace of the Future?

The Workplace of the Future basically is a future state of the workplace that supports a workforce. The whole design is about putting people first, connecting strengths, breaking down barriers, and getting the best talent to work for you – irrespective of where the person is, and also, building camaraderie and the community. This is the design philosophy of the workplace of the future. For Polycom, we take a step further – we define a Workplace of the Future to be any place that the staff wants to be at. We want to give flexibility, and for collaboration to happen, it can happen anywhere.

Why is it important for offices to become a Workplace of the Future?

I think retention of talent is important, especially in Singapore. There are insufficient knowledge workers. You want to encourage the stay-home mothers to come back to work – and that becomes a very important faucet and objective for the Workplace of the Future as well. Next, if you compare Gen X and Gen Y (the millennial) workers, the workplace must be crafted in such a way that we can maximize their talents. Millennials are all tech-savvy: they work smart, and the whole concept of work is also changing – they are not the nine-to-six sitting there, always looking at presence versus output. They are very conversant with technology. Designing a workplace that can maximize their talent, I think for companies to actually enforce that would actually help maximize the potential of the company.

How is this any different from the Western smart workplace approach?

I think there's a certain cultural shift – when you talk about American or European companies, they are very used to the whole concept of working from home, because the countries can be big and vast. In order to tap on talents wherever they are, they allow talents to work from wherever they choose to be, using technology to connect them together. In Asia, I think the mindset hasn't completely moved, where we actually need to define work KPI as output-based, instead of presence-based. That being said, I don't think that the Singaporean concept of work has really shifted there yet. We are working on it – we are working with different (government) ministries and agencies to change that mindset. At the end of the day, work is still defined by nine-to-six, and you have to be physically in the office. Technology-wise, we are almost equal already.

What are the factors that can promote a Workplace of the Future within Asia?

There a few faucets of this – for example, cost-cutting for companies by having hot-desking and having a mobile workforce. Gone are the days where they provide only one seat for every employee. Hot-desking and seat sharing helps cut down on real estate cost. Another would be the reduction of travel expenses – for example, the technology will allow expertise to be where they need to be without physically being there. Things include telemedicine in our part of the world where Singapore leans more along the private hospitals' medical tourism, so to speak. Instead of having patients fly in all the time, the private hospitals here are beginning to set up satellite hospitals in developing countries with just a GP there, but they can consult the specialist over video. Higher staff morale via work-life balance is a big thing as well. For example, in our company, we have that kind of work culture where one of our staff comes in only on Monday and Friday while she works the other weekdays from home, because she stays in the other side of Singapore – 30 MRT stops away from us. Those other days, we connect using video while she can supervise her two school-going kids. Having a Workplace of the Future promotes talented women to continue productive contribution.

If we were to start cultivating smart workplaces, what are the challenges that require our immediate consideration?

We have to encourage companies to think of KPIs being output-based instead of presence-based. We also work with government agencies to promote this initiative – statistics show that 52% of our Singaporean women aged 40 to 49 are still in the labor force, compared to US (76 percent) and the UK (79 percent). Our female participation rate is actually quite low. I think by working with different government agencies, we help to evangelize the fact that with technology, we can change and technology can supplement the presence-based requirement with video, instead of physical presence.

The camera as a collectible

STEPHAN SCHULZ, HEAD OF PRODUCT MANAGEMENT PROFESSIONAL CAMERA SYSTEMS, LEICA CAMERA

by *Marcus Wong*

What was the thinking behind the Leica SL? Why enter the crowded 35mm ILC market?

Well, this is the last gap that we have! *laughs* And a very important one.

With this, we have all kinds of cameras in our portfolio, and there's no other company that can say that. And in general, why we invested so much in system cameras is that some years ago we saw that the compact camera market would fade away.

It was not clever to make a DSLR at the time because it was foreseen to have an end. Sometimes you have to wait for the technology to mature; to be good enough. When we developed the S- system we saw that SLR-technology was still modern and appropriate for the medium format market. But for the full-frame market we saw that it wouldn't continue with SLR, so we waited until the technology for mirrorless was available.

Was there any technology in particular you were waiting for?

The main technology was the electronic viewfinder, but in combination (with) the image processor, to deliver the quality to the EVF and of course, to the frame rate for the whole camera.

We needed to be able to have fast read-out of the sensor for the EVF and for the autofocus as well, so the main drivers for the camera had to be good enough. And luckily enough battery technology caught up as well, so it could deal with the higher power consumption.

In recent years, it's all been about resolution and megapixels. What else can we do to improve the imaging quality of our cameras?

Well, when you talk about resolution in a very basic way, you're talking about resolving textures. But there is more to resolve – and that is tonal value. That means dynamic range is very important, as is the noise ratio.

The ability to keep dynamic range throughout the ISO range is also very important. The most important - in our view at least - is speed. If you're not able to capture an image at the appropriate moment, you will not have a good image. If you have the wrong image at 50 megapixels, then it's not worth a thing. So we focus always on speed because it allows photographers to capture the decisive moment.

Another reason is video. When the resolution gets too high the video read-out is different. So you have to consider everything together. When you have higher resolution you'll need a faster processor. You can't skip steps because that does not give appropriate value over a long time.

True. On that note, it seems like cameras don't have as much intrinsic value anymore because every year a newer, better model comes out. Is that something you see too?

Well yes. It seems like these days cameras are like throwaway devices. And that's why our concept with the camera is to create something with more emotional value in terms of materials and design. This is a camera that will look different in three years than it does today, and that's because the materials will age; it develops a soul after a while. This creates a value somehow, and you'll begin to enjoy your camera more.

From a technological standpoint, we think the technologies from the last few years have developed to a point where it's ok if you use technology that's a few years old. Even if you look at 18-megapixel cameras from a few years ago; they (continue to) still give nice images.

With the global economy still arguably in a slump, luxury brands are adjusting their approach to better accommodate consumer mindset. How do you think Leica has changed over the years?

It gets more and more difficult just to have products pushed by innovations. Sometimes it gets a bit boring to buy a new camera every year - that's market saturation, but we do not get into such markets. For example, our brand new camera can accept every lenses of every mount so the value of the lens is still good.

You look at old lenses from the 70s or 80s; very old, but they still work. So you find friends and family getting great joy of using this brand new camera with a lens they've had for years, and more importantly you'll find great control with these lenses.

Creativity doesn't depend on age or if you're a professional or not. Even a child can be very creative, so with a camera that is easy to use, it will give a bit more freedom back to being creative, which is the main driver to good work.

Here's a fun question to end with. Do you still make prints?

No, but I think that's not really just about the camera or film/digital, but also because of things like tablets and the internet. Before, I used to go to the drug store to make prints to show my family. Now with the internet and things like the tablet computer, I can just send them over via email and everyone can see them.

Still it's different when you see things in a print, especially when it's larger than A3 size. And then when you see those prints you wonder: who needs more than 24 megapixels?

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Our concept with the camera is to create something with more emotional value in terms of materials and design.

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LESS WASTE MAKES SPACE TRAVEL

by *Liu Hongzuo and Koh Wanzi*

Until last December, rockets used for space exploration were limited to a single launch – the rocket's booster detaches from the main unit, falling back to Earth as expensive junk. A good analogy would be aviation, where this breakthrough is the equivalent of finding out aeroplanes do not necessarily need to be scrapped after every flight.

Space Exploration Technologies Corporation (more fondly known as SpaceX) changed this when the Falcon 9 rocket managed to deliver satellites and then re-entered Earth with a soft landing. This allows the Falcon 9 to be reused, refueled and launched again, cutting down on material cost. This also implies how further space travel is possible – instead of building another spacecraft for a return trip, a rocket could travel to Mars, do the needful, and simply refuel for the journey back on a Mars outpost. SpaceX claims that the first stage rocket (which is the booster in question) account for 75% of the entire cost of a rocket launch. More precisely, the Falcon 9 exercise costs anywhere from US$60 million to US$90 million, and a significant portion of that cost can be saved for future attempts.

Right now, Elon Musk – CEO of SpaceX – says that they are currently researching on ways to reuse the booster portion of the Falcon 9 project. The landed rocket will be taken apart for research, though it will be a few years before more can be said about reusable spacecraft.

WORKING IN STYLE

Everyone wants a cool job, as inane as that sounds. But what does it really mean to be working in today's hipster tech environments, complete with sleeping pods and pantries calculated to expand your waistline? We're of the opinion that a pretty office does not a cool job make. There's so much more to it – culture, colleagues, and the work they do – but these firms we visited are pretty awesome, if we may say so.

Text by *Koh Wanzi + Liu Hongzuo*
Photography by *Jasper Yu*
Art Direction by *Ken Koh*
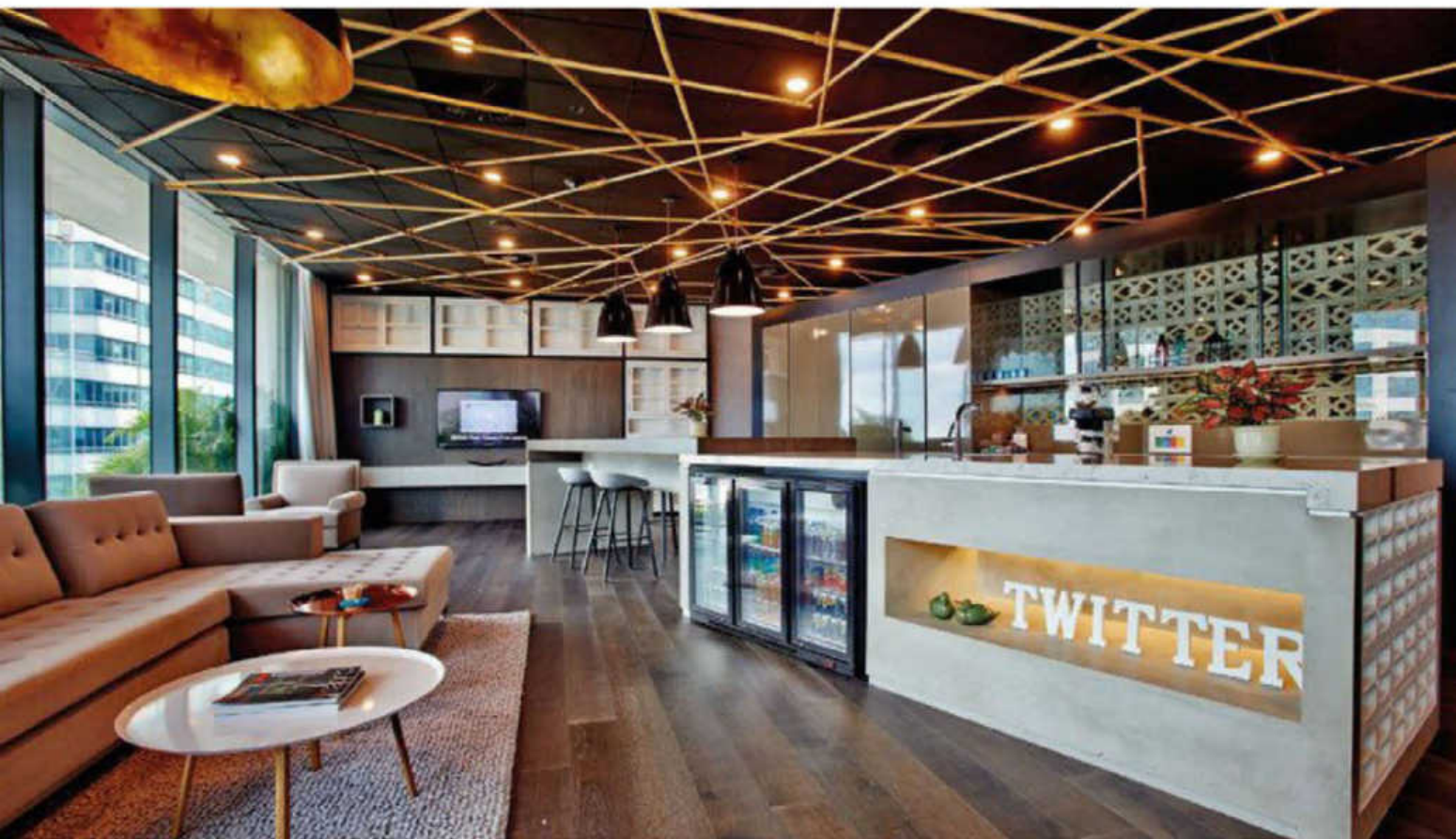
Twitter
Loving where you work.

To love where you work is not something everyone can say with conviction or in truth. The exception to that would be Twitter – where they make it very possible to fall for, and stay in love with the work they do. At the same time, Twitter's work culture is a reflection of the social media platform's style, which makes for an interesting dynamic in environment that favors both introverts and extroverts.

What's cool about this office?

The local office overlooks the Central Business District, giving the place a great view of our city and plenty of sunlight – a crucial factor in making the office's outstanding interior design.

It's no surprise that Twitter offices are known to be beautiful given the amount of attention they've gotten in the last few years. What these reports miss out on, is how each Twitter office combines both their company's culture and the local flavor of the country, making each Twitter office

THE DESIGN LANGUAGE IS MOST EVIDENT IN THE LIBRARY MEETING ROOM, WHERE IT FEATURES A QUIET SPACE THAT FACES THE SOUTHERN WATERS OF SINGAPORE – MAKING IT IDEAL FOR A SHORT BREAK. ALL THE MEETING ROOMS CAN BE USED AT WILL, EXCEPT FOR THOSE THAT ARE ALREADY OCCUPIED BY FELLOW COWORKERS...

unique in each country they operate out of. For instance, the Singapore office which has a capacity of 150 employees adopts a mix of tropical and old-timey elements that's unique to our past. Some ceilings are decorated with a mesh of bamboo sticks, while the 22 informal meeting rooms littered around the floor features shophouse windows. Other decorative elements in the general office area comes with potted plants hanging on grills that resemble an old HDB block, and all these little touches combined with windows that stretches out from the floor to the ceiling makes the office look like a local bird preservation sanctuary.

That probably won't go down well if you said it to a different workplace, but Twitter

would consider it a compliment – the design takes extra effort to incorporate both bird themes and the social media platform's quirks into everything else. Said meeting rooms are named after real and mythical birds, and all the facilities and equipment comes hashtagged with clever names. The design language is most evident in the Library meeting room, where it features a quiet space that faces the southern waters of Singapore – making it ideal for a short break. All the meeting rooms can be used at will, except for those that are already occupied by fellow coworkers, and the most formal Emu meeting room that's usually readied for larger, higher-profiled formal meetings.

With one common area (cafeteria)

that serves complimentary breakfast on Mondays, cold-pressed juices on Wednesdays, catered lunch on Thursdays, and Social Tea-Time on alternate Fridays, it's tough for Twitter employees to say no to the monthly gym membership subsidy. There's also a smaller in-office pantry, well-stocked with tidbits, cereals and good coffee to help you get through the day.

Working at Twitter would mean working like someone who uses the

platform. Employees are quick on their feet, arranging schedules and transferring information using cloud storage and online calendars. People can get involved as much as they choose to, as each talent has the space and autonomy to decide on their workflow and after-work interest groups. For example, the common area would clear the tables and chairs aside twice a week for yoga lessons, and any employee is free to start an interest group, should it not exist yet in Twitter's roster.

This place is the best for…

Highly-skilled, adaptable people with a great sense of pride in their careers would certainly feel at home in this office. Hui Theng, Senior Manager in Accounting and Delilah, Head of Direct Sales, say that they are always reminded of why they joined Twitter in the first place. They've toiled for Twitter back when it was a mere service office with barely any space to house all 16 employees, and now they're sitting in spaces that can fit 150 employees, with about 70 more waiting to be filled. It's easy for them to shape the office into a more conducive place than it already is, simply by providing feedback to their administrative peers. Hui Theng and Delilah share the same drive and hunger for achievement that can be seen in almost all of the employees here, yet none of them are bogged down by menial tasks. All in all, working here does have high expectations, but the work and office would be equally fulfilling in return. What's not to love?

Garena

Connecting the Dots.

When it comes to offices that have it all, Garena is up there with the best of them. Perhaps best known for its Garena+ gaming platform, the company has also ventured into a wide range of communication and e-commerce services that speak to its growing ambitions and reach. In fact, it shifted from its Murray Terrace office to its current home at the Galaxis Building to accommodate its rapid growth, which saw its headcount double year-on-year over the past three years.

Forget about being stuck in windowless rooms with whitewashed walls and bone-chilling air-conditioning. Spread over two floors, Garena's new 7,500 square meter office was literally designed to provide its employees with the most conducive and comfortable environment possible.

What's cool about this office?

You wouldn't notice it at first, but a whole lot of thought and planning went

A WHOLE LOT OF THOUGHT AND PLANNING WENT INTO EVERY ASPECT OF THE OFFICE'S DESIGN. GARENA'S MOTTO OF CONNECTING THE DOTS HAS INFLUENCED EVERYTHING FROM THE CARPETING — IT'S A SINGLE, CONNECTED PIECE — TO WORKSPACES LIKE STRATEGICALLY PLACED COLLABORATION CLUSTERS AND BREAKOUT ROOMS.

into every aspect of the office's design. Garena's motto of connecting the dots has influenced everything from the carpeting – it's a single, connected piece – to workspaces like strategically placed collaboration clusters and breakout rooms.

As a company that concerns itself with building bridges between and among communities and its audience, Garena has worked to foster a space where various creative and collaborative forces can blossom. In addition to its dedicated meeting rooms, a host of collaboration areas are scattered throughout the office for spontaneous discussions to take place.

And if you've got the nibbles, you can just head down to a sprawling pantry that you'll wish was your kitchen. It is stocked shelf to shelf with chocolate bars, ice cream cones, and other delectables, and the fridges are packed with milk, fruit, and other things to satisfy your cravings.

We also weren't surprised to find an entertainment corner at the end of the pantry, complete with an air hockey table, a pool table, and a foosball table for Garenians to engage in some friendly competition or just to destress. After all, all work and no play makes Jack a dull boy.

Furthermore, this is one of those companies that recognizes that a food coma is actually a thing. Sleeping pods are

located right next to the huge open offices for employees to catch some shuteye (and indulge in some postprandial somnolence). But in all seriousness, Garenians work hard, and the company knows that even the most dedicated workers need time to recharge.

What you probably weren't expecting was the inclusion of massage rooms, where Garenians can check in to have someone limber up those sore muscles. Yes, at work. Of course, there's a limit on this and employees can only indulge in 30-minute sessions, twice a month. Still, that sounds like a pretty good deal to us.
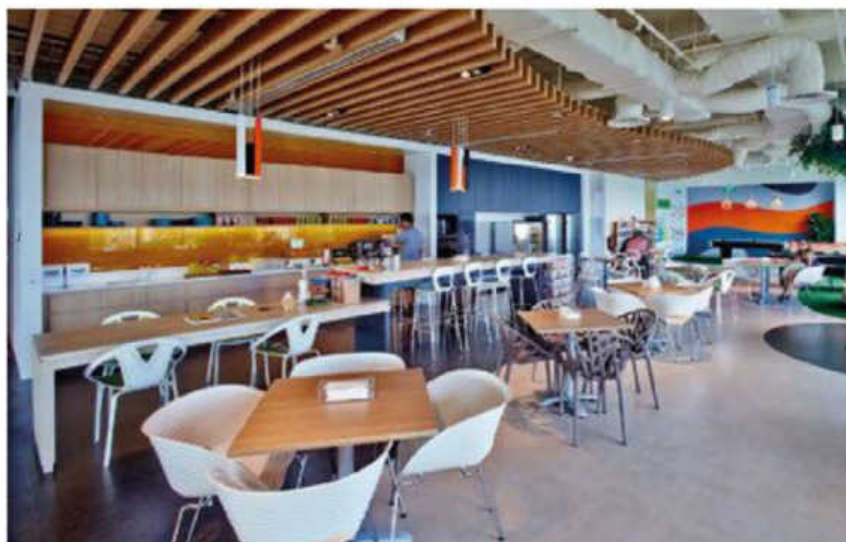
This place is the best for...

In our conversations with Garenians, we quickly picked up on a few common refrains. Fast-paced, passionate and transparent. Those were the words that came up the most often, regardless of whether we were speaking to someone in software development or game operations. Things move fast at Garena, and it's not long before an idea floated in a brainstorming session becomes an actual product.

This isn't one of those companies where there's a lot of soaring dialog but little action. Zed Zhang, a Business Development Manager, highlighted the huge focus on execution, which means that Garenians are able to quickly see tangible gains from their contributions — a big part of the rewarding experience that they all talked about.

Above all, we got a strong sense of the camaraderie that exists at all levels of the company. The open offices feel almost homely, and it really seemed as if Garenians were working among friends. In fact, the transparent and open culture at Garena is perhaps one of the most compelling aspects of the company, and it's something that's borne out in the details of the office design that we talked so much about. This is a fun and vibrant workplace for those who are serious about making concrete contributions in areas as diverse as gaming, e-commerce, and software development. Adaptable, dynamic, and agile — those are the qualities that the company embodies, and those are the same ones that Garenians must possess.

GrabTaxi
Making a Real Impact.

As a young startup, GrabTaxi hasn't quite had the time and opportunity to build a physical office that will incite your envy. Nevertheless, it's on our list for a very good reason – this is one of the fastest growing ride-hailing apps in the region, in an industry that is just beginning to revolutionize how we think about transport and car ownership. It recently opened a US$100 million technology hub here in April 2015 to devoted to R&D. Since then, the number of app downloads has rocketed up to 10 million, from 3.8 million previously. It now boasts over 185,000 drivers across 28 cities in six different countries in the region.

The company views itself as a social startup as well, and employees are motivated to expand more than just its scale and reach. In our talks with GrabTaxi employees, their compassion and focus on the end-user and drivers came out clearly – this is a company that channels its drive for success into creating opportunities for people and improving lives.

What's cool about this office?
It's not every day you get to see a company where people genuinely care about the social impact of their work. After all, the headlines Uber has generated with its aggressive expansion strategies, it's almost refreshing to see a ride-hailing firm that isn't focused on growing just for the sake of growing.

But that doesn't mean that the GrabTaxi team isn't ambitious and driven to expand the company's footprint and scale up operations. There's a saying at GrabTaxi – your problem is my problem, or YPIMP for short – that embodies the company's ethos. Employees are all deeply invested in achieving positive outcomes for all stakeholders. An every man for himself won't get you anywhere at GrabTaxi, and we were struck by the emphasis the team placed on the role of teamwork in resolving issues.

> THERE'S A SAYING AT GRABTAXI – YOUR PROBLEM IS MY PROBLEM, OR YPIMP FOR SHORT – THAT EMBODIES THE COMPANY'S ETHOS. EMPLOYEES ARE ALL DEEPLY INVESTED IN ACHIEVING POSITIVE OUTCOMES FOR ALL STAKEHOLDERS. AN EVERY MAN FOR HIMSELF WON'T GET YOU ANYWHERE AT GRABTAXI, AND WE WERE STRUCK BY THE EMPHASIS THE TEAM PLACED ON THE ROLE OF TEAMWORK IN RESOLVING ISSUES.

Unsurprisingly, GrabTaxi eschews closed-off cubicles for an office design, the better to facilitate collaboration and communication. This isn't the slickest office we've seen, but you've got to go deeper to appreciate the culture and values that GrabTaxi has fostered. Even though she just joined GrabTaxi just over a half year ago, Lauren Lin, an Assistant Marketing Manager, already describes the entire team as being a single close-knit family.

This isn't some cutthroat startup that just wants to up its valuation. There's a genuine sense of friendship at GrabTaxi, where the end goal is to benefit both drivers and riders and ensure they both get the best possible experience. For instance, Ditesh Gathani, Head of Engineering at GrabTaxi, talked about how accessibility features for the blind have been built into the GrabTaxi

This place is the best for…

Passionate, committed, and capable individuals who want to solve and tackle challenging problems, in fields as different as engineering, logistics, or marketing. As a real-time platform that must be able to scale up and cope with increased volume on-the-fly, GrabTaxi provides unique opportunities that are found in few other places.

This is a company that values out-of-the-box ideas and sharing. No idea is too out-there, and employees must be able to keep up with the pace of things, which we've heard described as being "ridiculously fast". The walls are literally papered with impromptu scribbles and post-its, a veritable melting pot of ideas and initiatives just waiting to be realized.

Finally, as we mentioned before, team players will thrive at GrabTaxi. If you want to surround yourself with capable individuals who constantly push each other forward, this is the place to be. The ability to work effectively as part of a team will serve you well anywhere, but this is taken to another level here. After all, YMIMP, remember?

Ditesh also talked about his experiences speaking with GrabTaxi drivers, who told him about the impact any app downtime had on them. Struck by the social ramifications system issues could potentially have on drivers, Ditesh came to better appreciate the full significance of the work he was doing.

app since its launch. More tellingly, the engineering team included the features without being prompted to at all – they just knew that it was the right thing to do.

As Head of Engineering, Ditesh oversees the entire team, and he says that the engineering minds he's met at GrabTaxi are some of the brightest he has ever seen, his pride in his team clearly evident.

Tableau

Going far by going together.

I t's a tough find when you want an office that has your best interests at heart, while ensuring that you feel involved at every step of the way. But such a workplace is real, in the form of an organization that helms Tableau Software, a data visualization program founded in California back in 2003. Fast forward nine years later, Tableau brought a Singapore office upon our shores, ready to show us what true collaboration is all about in its shiny new office.

What's cool about this office?

If you had the chance to speak to anyone at Tableau, you'll quickly realize that the makers of data visualization are big on teamwork. Coworkers are quick to greet and check in with each other, just like long-time neighbors, even with the hubbub of work floating in the brightly-lit compound. Their 50,000 square feet office in Singapore spreads across three levels (with two still under renovation),

EVERY YEAR, ALL 3,200 EMPLOYEES ARE FLOWN TO SEATTLE FOR THEIR ANNUAL GENERAL MEETING, AND THE OFFICES LOCATED IN THE ASIA-PACIFIC REGION ALSO HOLD THEIR OWN KICKOFFS FOR GOAL SETTING. NOBODY'S LEFT OUT.

and it facilitates the collaborative rhythm engrained into their work and play.

The office follows the design language of their original headquarters based in Seattle, and Tableau goes out of the way to import identical workplace tools to match. Everything - from the desks to their well-stocked pantry - uses the same stuff that their headquarters does. That's no small feat, considering how almost every desk is an adjustable workstation that lets the Tableau staff transform their spaces into standing desks, and back.

The flexibility of Tableau doesn't simply end there. Around the compound, you will find many small meeting booths that can sit approximately four people within. Any employee can just book a slot using the electronic room reservation system outside each booth, and do their work distraction-free. Equipped with a conference call system, these pods can grant a good deal of privacy while keeping the bustle down to a minimum. Everyone can benefit from these shared spaces, be it for a quick chat or an important meeting.

Tableau would seem like an ideal place to be if you don't like using PowerPoint or Excel. Data visualization is their core business; the office uses their flagship products – Tableau and Vizable – to do

their presentations. It's only sensible, and there's the extra benefit of interacting with the graphs and charts the way they prefer. With such technology, it breeds further collaboration, especially across workers of different tiers.

All this is further amplified by the kind of talent Tableau hires – which their own staff coin as "Humble-smart". Everyone and their ideas are valued, micro-management is not a thing here, and management is always ready to take up suggestions if there's a sound plan to fix the problem. Tableau also makes extra effort in recognizing workers at every level. Every year, all 3,200 employees are flown to Seattle for their Annual General Meeting, and the offices located in the Asia-Pacific region also hold their own kickoffs for goal setting. Nobody's left out.

But that's just about getting the best. Tableau also keeps the best by offering their people a chance to explore within their company – if someone feel up for the job, they can request for a transfer across different disciplines or even countries. Short term transfers would see reimbursement for accommodations while making up the difference in cost of living, which rides firm on how important each member at Tableau is a crucial part of their data visualization engine.

But how do we know Tableau is truly as good as they seem? A quick talk with Vaidy, Product Marketing Manager for Tableau, shows that the company doesn't pull punches if they are serious about working together. Originally a client who uses Tableau's services, Vaidy's U.S. work visa expired and he had trouble getting the necessary paperwork done. Tableau stepped in and brought Vaidy on-board, creating a role just for him so he could work in Singapore. It's one thing

if a company respects their employees enough to care for their personal struggles, but Tableau's story starts the moment you're working with them – be it client or staff. HWM

This place is the best for…

If you're a talented person who loves collaborating with your colleagues while making friends in the process, Tableau is the firm that lets you do that while getting involved in your achievements. It's easy to install a pretty pantry, but it's a whole different level when a tech firm is so involved and invested in their people.

TRAVELLING WELL FOR THE WELL-TRAVELLED

by *Liu Hongzuo*

The health-conscious streak in ourselves keeps us well-kept and healthy. Looking out for our own wellbeing is already tough, and traveling brings out the worst in our bodies. We lose a little of ourselves by dealing with flight delays, getting terrible sleep, and skipping out on exercise. Here, we look at possible gadget choices that can help us close that gap between our compromised wellbeing during our travels.

FITBIT CHARGE HR
WWW.FITBIT.COM

HR stands for heart rate, and this wearable is capable of tracking your heartbeat around the clock. The accompanying app for smartphones can take your heart rate information and translate it into various data, such as calories burnt and better optimization on your workouts and rest. Equipping a heart rate monitor on your wrist eliminates the need for a chest-strap monitor. As a fitness device, it also comes with steps and sleep tracking, and automatic app recording, making it ideal for travelers who want to be in the pink of their health wherever they go.

SPIRE
WWW.SPIRE.IO

This simple-looking clip-on is actually a smart wearable that can track your stress levels over the course of a busy day. The Spire utilizes your breathing patterns and intuitively observes if you are tense, or if you are breathing correctly while engaged in day-to-day activities. It also comes with a steps tracker, and its own app that notifies you every time you are breathing in a tense manner. The Spire comes with its own portable charging pod, making it possible for you to track your own stress levels wherever you go.

PHILIP STEIN SLEEP BRACELET
WWW.PHILIPSTEIN.COM

The Philip Stein sleep bracelet uses proprietary natural frequency technology to induce better sleep via a luxurious wrist accessory. The frequencies chosen for the sleep bracelet are tuned to help relaxation and focus, as well as promoting a more restful slumber. This wearable is slim and portable, making it ideal for frequent travelers who skip out on proper rest, or are constantly exposed to man-made electromagnetic frequencies generated by the hubbub of electrical appliances and Wi-Fi. It requires no battery, and it looks stylish, too.

RE-TIMER
WWW.RE-TIMER.COM

This curious-looking pair of glasses is extremely handy for people who have to deal with jet lag and different time zones on the regular. Called the Re-Timer, the Australian-based wearable weighs just 75g, and it uses light therapy to help adjust your circadian rhythm to ensure your natural body clock is in-sync with the correct bedtime in your current location. The result is a more natural sleep cycle, allowing you to make the most out of your day overseas, instead of wasting it in a hotel room to nurse a jet lag. The paired app helps to log your usage, making it easier to recall the times where you need to use the Re-Timer.

OURA
WWW.OURARING.COM

If you're the sort who prefers to check your wellness data at your own pace before making lifestyle adjustments on the following day, then the URA would be the better fit. This ring-shaped wearable is entirely automatic: there's an on-off feature that triggers when you put on or remove the ring, a sleep detection feature to know when you're awake, plus an activity tracker for movement. All this information is passively collected and parsed in the phone app, which you can review to learn more about your lifestyle habits, as well as learning how to be better.

LAB RESULTS

Every month behind the doors of our super secret gadget testing facility, the latest tech products are put through their paces using industry recognized benchmarks and our own blend of real world usage scenarios. Here are our findings.

HOW WE RATE:
Products are rated on a scale of **1** to **10**; **1** being so abysmal, it should be a crime to sell it, and **10** being almost perfect. Come now, nothing is perfect. An Editor's Choice may also be awarded based on unique merits.

TEST
BEST PERFORMANCE
HWM
SINGAPORE

TEST
BEST VALUE
HWM
SINGAPORE

TEST
EDITOR'S CHOICE
HWM
SINGAPORE

MORE INSIDE >

HTC ONE A9
This year, HTC is hoping there can be only One...again.

LG EG960T
This is the OLED TV you've been waiting for.

MOTO 360 (2ND GEN)
Smarter, more powerful, more options, same flat tire.

SOUNDING OUT THE BEST

We're spoilt for choice when it comes to wireless portable speakers – they come in all shapes and sizes, calling out to us with the promise of great sound. But if you had to pick one, here's our take of speakers large enough for great sound, with aesthetics and features that matter, yet small enough to bring about anywhere.

Text by *Liu Hongzuo*
Photography by *Vernon Wong*
Art Direction by *Ian Chong*

B&O BEOPLAY A2

The combination of its shimmering aluminum trim with carefully machined buttons, and the little leather strap to the side accentuates the premium look and feel of the A2. Unfortunately, the front and back speaker grill is made of plastic, which takes away some of the glitz and style. Among the four, the A2 is also the flattest looking speaker, taking up less space on the table. Nonetheless, for a speaker modeled after a purse, it is bound to get people talking. While it's necessary to showcase the A2, its upright design also means it topples easily if you're not careful.

Feature-wise, the BeoPlay A2 feels sufficient. Besides the expected Bluetooth connectivity, it comes with a 3.5mm audio input port, so there's always the option of wireless or wired audio. The A2 can remember up to eight devices, so switching between smartphones or users is easy. Like the Sony and the Creative speaker units, the A2 also comes with a 5V DC Out USB port for charging mobile devices. But what makes the USB output port more sensible than the other contenders is its battery life that boasts 24-hour playback, which is more than twice the playback time that other speakers of its tier can offer.

The BeoPlay A2 is a great performer too with clean playback, quite unlike how luxury brands tend to price themselves outside of their performance quality. It is similar in sound signature to the Sony, but the A2 comes with an even brighter feel that borders on a cold touch to everything it plays. It's not the loudest speaker out of the four, but its sound certainly exudes class – with a few caveats, like lesser emphasis on midrange and a slight peaking at higher treble notes.

With its sound profile, we expected the BeoPlay A2 to completely dominate the Adele track. It did, but it lacked fill and volume in the midrange, while high frequencies were a slight challenge. It was excellent with Buckethead's Sail On Soothsayer, with great reverb playback and managed to change a warm and gritty tune into a clear masterpiece. Needless to say, Hotel California was definitely enjoyable, with the BeoPlay A2 being the best at bringing out the track's soundstage.

With all its factors considered, you would expect that the B&O to not only have excellent performance, but excellent design. It actually falls short in a few places, like its skinny standing room and its excessive use of plastic, but in return, you get a speaker with an intimidating battery life with great soundstage. It's hard to ignore the A2 if we want to talk about hearing one of the best options here.

⊕

Stylish and excellent sound quality.

⊖

Skinny standing point with disproportionately heavy body.

AT A GLANCE

Driver Size
76.02mm

Connectivity
Bluetooth 4.0

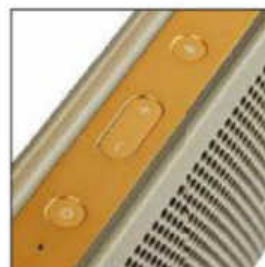**Battery Life**
24 hours

Weight
1,100g

Price
$549

A plastic grill? We expected more from B&O.

The leather strap handle feels unnecessary at first, until you realize the A2 weighs 1.1kg and it's quite a blessing to have.

Carefully machined buttons is what separates the good looking from the premium users.

CREATIVE SOUND BLASTER ROAR PRO

Physically, the new Sound Blast Roar Pro looks just like its predecessors. Its controls are lined up along the rubber spine, with large tactile buttons for key functions and smaller buttons for its special features. One interesting point to note is that the Roar Pro follows the five-driver layout of the first Roar speaker, instead of the Roar 2. As a whole, the grey-and-black wireless speaker feels thick and solid with an appearance to match.

The Roar Pro's comes with a few new features, although the biggest is also a niche one. Besides playback, it can be used as a portable loudspeaker for live performances or speeches, but requires a separate $129 wireless microphone accessory, the iRoar Mic for this to work. Besides this, the Roar Pro does come with handy add-ons out of the box, such as a built-in audio profile selector for warm, neutral, or energetic sound. It also comes with aptX Low Latency support, for even lower delay playing back songs wirelessly from an Android device. The new speaker also has a 10-hour playback time, which is a two-hour increase from the first two Roars. The Roar Pro also keeps all the core features introduced before such as recording mode, the volume-increasing Roar button and the TeraBass button.

The Roar Pro's sound signature is rounder with a more compact soundstage when compared with the Sony wireless speaker. The soundstage gives a very different closed-door performance feel to the Roar Pro, but it rounds off the midrange frequencies too much as well. The bass handling is not overdone like the Pulse 2, but it's quite clear to us that the Roar Pro is bass-heavy and aggressive in general. It has a great time handling Adele's distortion and bass on Melt My Heart to Stone, but the keyboards and guitar feels muted compared to the other frequencies at play. We expected Tiesto's Elements of Life to do well due to its hard-hitting nature, but even the electronic song was too complex when it came to the less noticeable details, such as the full synths and galloping beats.

All in, the Sound Blaster Roar Pro does have what it takes to be the best. If you value features at the cost of some sound quality, the Roar Pro is a no brainer, especially when up against the nearly feature-less Sony SRS-X55. While it may not be versatile for all music genres, the features ensure that you get to use it even in different audio situation that's not always related to playback.

+ Feature filled, with some use one way or another.

− Different materials used in chassis design can be clashing.

AT A GLANCE

Driver Size
38mm

Connectivity
Bluetooth 3.0

Battery Life
10 hours

Weight
1,100g

Price
$349

When buying a Roar Pro, there's no doubt you'd want to press the Roar button, which makes songs 3dB louder.

The rubber spine gives the Roar Pro a rugged, durable look.

The speaker now comes with in-built sound equalizer, allowing you to switch profiles at a flick.

JBL PULSE 2

JBL returns with the second version of their bottle-shaped light show. Dubbed the Pulse 2, it is the same wireless portable speaker with its signature multi-colored LED lights, except it's slightly larger in height and width, has improved control placement and new gimmicks to capitalize on. At first glance, the Pulse 2 has a visibly finer mesh for its LED feature, with controls spaced out lengthwise across the speaker. In place of the predecessor's old control pad is a passive radiator, with the same radiator on the other cylindrical end. Build quality is very impressive – the device as a whole feels sturdy and is also splashproof, adding to its overall durability.

JBL made some changes to the Pulse 2's LED display (which they call Light Show), by removing the old color selection dial and implementing a new color picker called JBL Prism. JBL Prism lets you choose your desired color by pointing and shooting the color-picking camera lens at any object; the LED display should then follow your new color choice. While gimmicky, it does open up more options for a feature that's already unique amongst the competition. Still, it's important to note that firing up Light Show will half its playback time; the Pulse 2 can last for about 10 hours otherwise. This version comes with Bluetooth 4.1 for wireless efficiency, but does away with NFC, which isn't really missed. There's a 3.5mm Aux In port if you like to stream your audio the old-school, wired method.

Performance-wise, the Pulse 2 did better in bringing out Sail On Soothsayer's pacing and nuances in the gritty electric guitar parts. Adele's Melt My Heart to Stone saw some instrumentals missing out on detail in favor for her vocals, which made the track sound hollow, but still enjoyable. Overall, the Pulse 2 favors bass-heavy tracks, with lower frequencies portraying more vigor. Unfortunately, there's detail loss on the higher frequencies. It has a good soundstage despite its boomy bass signature and is capable of music loud enough for your average bedroom, making it ideal for noisy gatherings, but not for a quiet evening in with your favorite songs.

Getting such a flashy speaker does have its benefits, given how the audio dispersion, volume and signature are designed for small parties. The JBL Pulse 2 could use a more versatile sound signature and better attention to audio details, but Light Show is bound to keep you and your guests enthralled.

+
Visually exciting to own.

−
Not the most versatile speaker.

AT A GLANCE

Driver Size
45mm

Connectivity
Bluetooth 4.1

Battery Life
10 hours
(5 with Light Show)

Weight
775g

Price
$339

Light Show is attractive. It can get friends curious, or just something relaxing to stare at after a long day.

The JBL Prism is a camera lens that detects colors, and your Pulse 2 will chameleon itself to your selected hue.

Controls are all on one side of the bottle-shaped speaker, making adjustments easy.

SONY SRS-X55

You would think that the Sony SRS-X55 portable speaker as unwieldy and heavy with its listed weight at 1.2kg, but with its 51mm-wide width, it actually feels smaller and easier on the grip compared to other lighter contenders, like the JBL Pulse 2. The X55 adopts a brick-shaped exterior with the front and back featuring its metal audio grill, and the sides feature machined aluminum panels against a plastic matte body. While the X55 looks and feels premium, its glossy glass top panel is prone to attracting dust, dulling its aesthetics somewhat. The back mesh gives you a glimpse of its two passive radiators from the grill gaps, which tells us that the speaker can project sound beyond the front.

The X55 comes with standard features for taking in audio – Bluetooth 3.0 and NFC for wireless users, and a 3.5mm Aux In port for wired sound. There's a USB 2.0 port for charging your mobile device using the speaker, making it a thoughtful and practical addition, since you might have to sacrifice one wall socket for the speakers when you are intending stream higher-powered audio (the subwoofer can go up to 20W when X55 is plugged in to a power source). While the control buttons are handy, they're not very intuitive. Only the power button and phone-call button are tactile, while the volume rocker, Bluetooth pairing, and play button are non-tactile touch buttons, making it hard for the user to do minor adjustments simply by feeling up the speaker. It doesn't help that the volume buttons are less responsive.

It's not hyperbole when we say that the X55 has the most balanced sound signature of the four we've shortlisted. It offers a chill and crispy sound signature paired with an open soundstage. Pushing the X55 to its limits doesn't make it peak or distort either, which is surprising for a $300 wireless speaker. This performance quality was most evident on the live rendition of Hotel California by The Eagles, the X55 managed to produce good and spaced out positioning of instruments, plus its ability to separate multiple vocal tracks from each other.

It may not have the friendliest controls, but the X55 makes up for it with easy use, practical form factor, pleasant physical appeal, and its good performance - even before factoring the cost into equation.

➕ Excellent sound balance and feel.

➖ Speaker controls are not user-friendly.

AT A GLANCE

Driver Size
38mm

Connectivity
Bluetooth 3.0
NFC

Battery Life
10 hours

Weight
1,200g

Price
$299

The Sony SRS-X55 pays attention to detail, with its machined aluminum sides for a premium feel.

With NFC support, pairing devices is a simple procedure, although Bluetooth is still a must.

The built-in controls are not uniform – there's a mix of tactile buttons and touch-only controls.

MODEL	B&O BEOPLAY A2	CREATIVE SOUND BLASTER ROAR PRO	JBL PULSE 2	SONY SRS-X55
TYPE	Portable Wireless Speaker	Portable Wireless Speaker	Portable Wireless Speaker	Portable Wireless Speaker
DRIVER SIZE	76.2mm (full-range) 19.05mm (tweeters) 76.2mm (bass)	38mm (high frequency) 63mm (bass)	45mm	38mm
CONNECTIVITY	Bluetooth 4.0 (AptX, AAC)	Bluetooth 3.0 (A2DP, AVRCP, HFP) NFC	Bluetooth 4.1	Bluetooth 3.0 NFC
FREQUENCY RESPONSE	55 – 20,000Hz	N.A	85 – 20,000Hz	60 – 20,000Hz
BATTERY LIFE	Up to 24 hours	Up to 10 hours	Up to 5 hours (with light show)	Up to 10 hours
WEIGHT	1,100g	1,100g	775g	1,200g
DIMENSIONS	44 x 142 x 256mm	57.0 x 202.0 x 115.0mm	84.2 x 194.4 x 84.2mm	221 x 118 x 51mm
PRICE	$549	$349	$339	$299

HELLO, IS IT BLUETOOTH YOU'RE LOOKING FOR?

We often take for granted the Bluetooth profiles and codecs that are supported. The abbreviations actually do mean something, but it does take a little bit to explain what each one offers. For your benefit, here's what some of the most common Bluetooth profiles actually offer – it would do users well to mentally note them down so they can choose the correct speaker for their setup.

A2DP (Advanced Audio Distribution Profile) means that the device is Bluetooth-enabled for audio in high-quality mono or stereo via asynchronous connection-less (ACL) channels. The audio will go from a source (the music file, or a piece of recording from your microphone) to your audio sink (your headphone, or the music/voice recorder).

AVRCP (Audio/Video Remote Control Profile) is a technology that lets you alter your target, such as your speaker or even lightbulb, to have its properties altered via a remote control like your smartphone. It sounds pretty straight-forward in nature, but a Bluetooth profile lacking this feature would mean that your physical device's control can only be altered by walking to the speaker's controls. Since your audio is already a wireless connection, we've come to expect the same convenience on your speaker.

AptX is a proprietary audio codec compression algorithm that isn't owned by Bluetooth, although you'll see it marketed under the Bluetooth compatibility specifications. That's because AptX compresses data over Bluetooth in a way Bluetooth doesn't, and the result is the ability to stream CD-like quality over the wireless connection. There's one catch: both your audio source (phone) and your playback device (wireless speaker) must have AptX support, or your playback will automatically fall back on the lower quality SBC (a low-complexity subband coding that values energy efficiency over audio performance). Many sources have AptX, but not Apple's iPhones – they have other workarounds to it (like support for proprietary, wireless AAC audio).

AND THE BEST PORTABLE SPEAKERS IS

TEST BEST PERFORMANCE HWM SINGAPORE

SONY SRS-X55

Portable wireless speakers have come a long way from a niche accessory to boost the tinny audio from your smartphone to being able to produce powerful-room filling sound. Last year, Creative showed some of the big boys that innovation can come in a modest all-round package with the Roar and this year's Roar Pro improved on functionality, but with added cost. The B&O BeoPlay A2 on the other end of the scale also proves what premium audio can be worth.

However, the stand out speaker this time has to be the Sony SRS-X55. It performs equally as good as the BeoPlay A2 at almost half the price and has a better grasp of a wider range of music than the Roar Pro. Put aside aesthetic and functional gimmicks, and you'll find that the Sony SRS-X55 is a speaker with almost impeccable audio delivery for its size.

VS
ACER ASPIRE R13
·
ASUS ZENBOOK UX305
·
DELL XPS 13
·
HP ENVY 13
·
LENOVO YOGA 900

FASTER, LIGHTER, AND SLEEKER

Now that Intel's sixth-generation Skylake processors are out in the wild, manufacturers have begun to roll out their updated convertibles and ultrabooks packed with the latest hardware. This means faster machines that last for even longer, all wrapped up in slimmer and more attractive packages than before. Interested? Read on to find out the best of the lot.

Text by *Koh Wanzi*
Photography by *Darren Chang*
Art Direction by *Ian Chong*

ACER ASPIRE R13

The Acer Aspire R13 is quite a nondescript convertible notebook. It is a fairly thick dark gray slab, with its display and back lid covered by sheets of Corning Gorilla Glass 3, more commonly found on smaller devices like mobile phones and tablets.

This is actually the thickest and largest ultrabook of the lot – while it isn't huge per se, it isn't going to disappear into your tote bag as easily as some of the others.

In practical use, the Corning Gorilla Glass 3 display should mean that you have to worry less about scratches, but we think Acer could have dispensed with the glass covering on the lid. We found that this was prone to fingerprints and smudges, and unless you're going to dedicate a lot of time to wiping them off, the face of your notebook is going to be quite grimy.

Furthermore, the display was a modest 1,920 x 1080 pixel IPS panel – quite a letdown considering that all the other ultrabooks reviewed here have ultra-high resolutions of 3,200 x 1,800 pixels. Of course, the Acer's full HD screen was by no means fuzzy, but it was noticeably less crisp in a side-by-side comparison.

+ Versatile display can be used in many different modes.

− Larger and heavier than competitors.

That aside, the Aspire R13 is equipped with performance-oriented features like two 256GB M.2 SSDs configured in RAID 0 for faster read and write speeds, and support for MU-MIMO wireless connections via a Qualcomm Vive 2x2 adapter. In addition, a USB Type-C port offers Thunderbolt 3 connectivity, which means it also supports DisplayPort 1.2.

Another standout feature is the sheer versatility of the hinged display. The screen itself can rotate around the U-shaped stand and be used in six different modes, including as a tablet, easel, or stand. Although not as simple as the 360° hinge on the Lenovo Yoga 900, the hinge was fairly easy to work and felt quite well-built.

The Aspire R13 also comes bundled with an Aspire Active Stylus that felt more like a freebie than anything. It didn't have the heft of the Microsoft Surface Pen, and the palm detection feature did not function as well. We also found that with just 256 levels of pressure sensitivity, the strokes were not as smooth as those on the latest Surface Pen. Ultimately, the pen is useful for quick note-taking, but you're not going to derive any real joy from using it.

AT A GLANCE

Display
13.3-inch 1,920 x 1,080 pixel IPS touchscreen panel

Processor
Intel Core i7-6500U (2.5GHz, 4MB cache)

Storage
Dual 256GB SSDs in RAID 0

Weight
1.6kg

Price
$1,998

The USB Type-C port also supports Thunderbolt 3.

There is a built-in SD card reader at the side.

The notebook features a full-sized HDMI port.

ASUS ZENBOOK UX305

The ASUS ZenBook UX305 is the only ultrabook in our shootout to feature a fifth-generation Broadwell processor instead of the newer Skylake ones. While it is a matter of time when an upgrade comes along, at time of writing, ASUS did not have a Core i Skylake variant of the UX305, which was why we had to stick to a Broadwell-equipped unit for our testing.

Unfortunately for the UX305, this means that it is already handicapped from the outset. Skylake offers both better performance and power efficiency, so the UX305 lagged behind the others in terms of performance and battery life. More tellingly, its heftier 56Wh battery didn't last as long as the HP Envy 13's smaller 45Wh pack.

Nevertheless, the ZenBook's slim profile – it is just 14.9mm thick – and light weight make it quite portable. Its entire body is also constructed out of aluminum, and the lid features a circular brushed metal pattern. The overall impression is of quite an appealing, minimalistic device that is very solidly-constructed.

The display itself is a 3,200 x 1,800 IPS

panel, in the same ballpark as the majority of its rivals. However, there's no touchscreen support here, but most users of ultrabooks probably aren't going to miss it. We also like the fact that the screen features a matte coating instead of a glossy one, as this should help reduce problems with reflections and using the screen directly under overhead lighting.

The keyboard is also a standard chiclet design that is quite easy to get used to. The row of function keys at the top works with the Function button to provide quick access to features like brightness and volume controls.

When it comes to display outputs, the UX305 relies on a single micro-HDMI port, so be sure that you have the right display cables if you're intending to hook this up to an external monitor. Of the two USB 3.0 ports, one of these supports what ASUS calls Charger+, which allows you to charge your peripherals more quickly and also while the notebook is sleeping or powered off. If you have multiple devices, this could effectively give you an extra charging point without having to leave your laptop on overnight.

+ Good build quality and lightweight design.

− Previous generation processor.
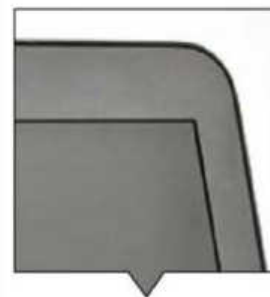
The matte display helps cut down reflection from overhead lighting.

There is just a single micro-HDMI port for display output.

LED indicators at the side provide you with information on system status and battery level.

DELL XPS 13

The Dell XPS 13 is arguably the most impressive ultrabook to look at. For starters, its CNC-machined aluminum body gives off a lovely silver-gray sheen that exudes an undeniably premium feel. Upon opening the lid, you're greeted by a gorgeous edge-to-edge IPS display that boasts a screen resolution of 3,200 x 1,800 pixels.

The thin bezel is more than just an aesthetic decision though, and it has actually enabled Dell to cram the XPS 13's 13.3-inch display into the body of an 11-inch laptop. This means that the XPS 13 is essentially the smallest notebook in this review, which is saying quite a lot in a category of compact ultrabooks and convertibles. At 1.29kg and measuring just 304 x 200 x 15mm, it is exceedingly portable and makes for a great traveling laptop.

But because of the thin bezel, the usual HD webcam has been relocated to the bottom left corner. It's a little unconventional and may possibly give whoever you're chatting with a slightly unflattering view of yourself, but it's nothing we can't live with.

The ultra-high resolution display is also touch-capable, which gives you the convenience of being able to navigate via touch. But considering that the XPS 13 is not a convertible, this feature is more of a luxury than a necessity, and is no doubt part of the reason why the notebook costs as much as it does.

In addition, it has a decent-sized 56Wh battery, which helps it score points for mobility because its battery life was only second to the Lenovo Yoga 900, which has a larger 66Wh battery.

One other thing to note is that the XPS 13 doesn't have any dedicated display outputs. Instead, it relies on the USB Type-C Thunderbolt 3 port to output over DisplayPort and HDMI. So yes, you'll still be able to hook up to an external display, but you'll need the right adapter. The Thunderbolt 3 port provides up to 40Gb/s of bandwidth, so you get USB 3.1 speeds using it too.

Another nice feature is the presence of five battery level LED indicators on the right edge of the XPS 13. Pressing the adjacent button will cause the LEDs to light up and show the current battery level in steps of 20%. It will even work when the notebook is powered off, so you can quickly check if you need to juice it up before taking it out.

➕ **Stunning design and compact size.**

➖ **Expensive.**

AT A GLANCE

Display
13.3-inch 3,200 x 1,800 pixel IPS touchscreen panel

Processor
Intel Core i7-6500U (2.5GHz, 4MB cache)

Storage
256GB SSD

Weight
1.29kg

Price
$2,299

The Thunderbolt 3 port allows you to output over HDMI and DisplayPort.

The carbon fiber composite palm rest resists smudges.

The PowerShare port lets you charge your devices from the notebook's battery.

HP ENVY 13

Right off the bat, the HP Envy 13 stands out because of the great value it offers. For $1,699, you get most of the essential features offered by the other ultrabooks, like the same Intel Core i7 processor, 8GB of RAM, and a 256GB SSD. The display itself also boasts the same 3,200 x 1,800 pixel resolution as the others, so you're really getting a very similar experience overall, at least in terms of performance.

However, when set beside the likes of the Dell XPS 13, the Envy 13 clearly packs a lot less oomph visually. The minimalistic aluminum and magnesium body could almost be called plain, especially when compared to the XPS 13's stunning edge-to-edge display.

Still, it does have a few things going for it in terms of design. For instance, it is the thinnest notebook of the lot at just 12.9mm thick. While it is not the lightest, its slim profile does mean that you'll be able to slip it more easily amongst your files and papers. In addition, its build quality also feels quite solid, and a closer examination revealed a very well-constructed machine that should serve you quite faithfully.

It also features a unique lift hinge design that effectively elevates the keyboard when the lid is open. This provides a more comfortable angle for typing, and may even improve cooling slightly as it creates more breathing room for the exhaust vents.

The chiclet, backlit keyboard is flanked on both sides by Bang & Olufsen speakers, which are actually quite decent, as far as notebook speakers go. They were quite loud and sounded reasonably clear, so you should get a passable experience when watching movies.

A fingerprint reader occupies the right side of the palm rest. Don't expect any fancy Touch ID-esque mechanisms on it though – this is still of the swipe-to-register variety. In all fairness, it does its job well and we were able to set up our fingerprints in Windows Hello in good time.

But you're probably wondering what else it's lacking compared to its more pricey counterparts. Honestly, nothing too consequential. It is missing a USB Type-C Thunderbolt 3 port that can support both HDMI and DisplayPort outputs, but it does have a full-sized HDMI port to make up for that. It also lacks a touchscreen display, but that isn't a feature that you really need in a non-convertible ultrabook.

+ Offers a great feature set for its price.

− Plain design and thick bezel.

There is a full-sized HDMI port on the side.

This is the thinnest notebook of the lot at just 12.9mm at its thickest point.

The lifted hinge design elevates the keyboard for a better typing angle.

LENOVO YOGA 900

As the successor to the Lenovo Yoga 3 Pro, the Yoga 900 retains many elements of its predecessor while improving its flaws. For starters, the signature watchband hinge has been upgraded to fix the display flexing issues on the Yoga 3 Pro in tablet mode, which also caused some screen discoloration. While there is still some flexing on the Yoga 900, we no longer noticed any discoloration.

The chiclet keyboard has also been updated to feature an additional row of function keys, adding some much-needed quick access keys like brightness and volume controls.

We also like the new smooth faux leather palm rest covering. This looks far better than the dotted grid pattern on the Yoga 3 Pro and compares favorably against its competition. Still, we have some grouses about the keyboard design. For one, the Enter key was tall but not long enough, making it difficult to reach over and hit it while typing. Similarly, the Backspace key was barely wider than a regular letter key, which also took some getting used to. Honestly, we felt that these two frequently-used keys could have been better shaped and positioned.

The 3,200 x 1,800 pixel IPS display is on par with the other ultrabooks, and pictures appeared crisp and vibrant. And as expected of a convertible, the display is also touch-capable, which has the added bonus of allowing you to more easily scroll through web pages even when in laptop mode.

But like the majority of the other tested ultrabooks, the display was of the glossy sort as well, which means that it suffers from annoying overhead reflections. However, given that this is a convertible, we can hardly wish for a matte display here. A quick solution is to increase the screen's brightness, which should help reduce reflections somewhat.

In addition, the Yoga 900 does not have any dedicated display outputs, much like the Dell XPS 13. However, the XPS 13 supports DisplayPort and HDMI outputs via its Thunderbolt 3 port; the Yoga 900's USB Type-C port does not support Thunderbolt 3. As a result, you can only output over HDMI via its Type-C port, and you'll need a separate adapter as well. This probably isn't going to be a big deal for most users, but if you frequently connect your notebook to external displays, do take note of this.

+

Watchband hinge is simple and convenient.

−

Display still flexes slightly in tablet mode.

AT A GLANCE

Display
13.3-inch 3,200 x 1,800 pixel IPS touchscreen panel

Processor
Intel Core i7-6500U (2.5GHz, 4MB cache)

Storage
256GB SSD

Weight
1.29kg

Price
$2,299

The watchband hinge has been upgraded to be more solid.

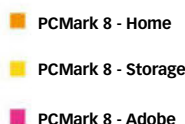The USB Type-C port only supports output over HDMI.

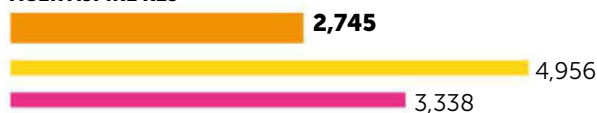The proprietary charging port doubles as a USB 2.0 port.
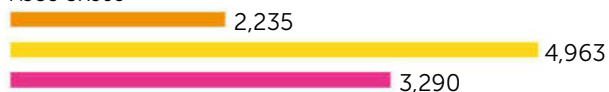
PC Mark 8

(higher is better)

With the exception of the ASUS ZenBook UX305, all the other ultrabooks feature nearly identical specifications, which was why there was little to differentiate their performance in PCMark 8. Nevertheless, it looks like the Aspire R13's RAID 0 storage array may have helped it take the overall lead here. However, this lead in synthetic benchmarks isn't likely to translate into any tangible difference in daily use, which was why the Acer didn't really earn bonus points for its performance.
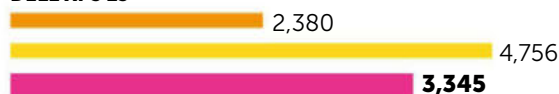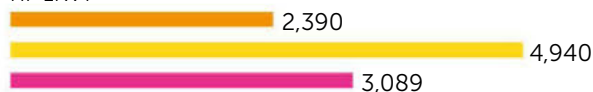
- 🟧 PCMark 8 - Home
- 🟨 PCMark 8 - Storage
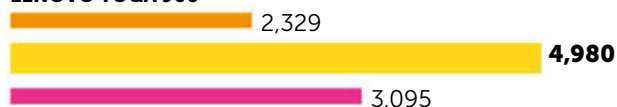- 🟥 PCMark 8 - Adobe

ACER ASPIRE R13
- 2,745
- 4,956
- 3,338

ASUS UX305
- 2,235
- 4,963
- 3,290

DELL XPS 13
- 2,380
- 4,756
- **3,345**

HP ENVY
- 2,390
- 4,940
- 3,089

LENOVO YOGA 900
- 2,329
- **4,980**
- 3,095

Portability Index

(higher is better)

Our portability index attempts to provide a measure of how portable the different ultrabooks are relative to each other. The Dell XPS 13 came ahead here, thanks to its comparatively large 56Wh battery, compact size, and light weight. Unsurprisingly, the Acer Aspire R13 didn't fare as well because of its smaller battery pack and the fact that it is the largest and heaviest of them all.

ACER ASPIRE R13
- 1.501

ASUS UX305
- 2.376

DELL XPS 13
- **3.485**

HP ENVY
- 2.879

LENOVO YOGA 900
- 3.119

Battery Life

(minutes, higher is better)

Battery life is one of the most important factors when it comes to portable ultrabooks. All the Skylake machines benefited from the improved power efficiency, which caused the ASUS ZenBook UX305 – the sole Broadwell notebook – to fall behind. As expected, the Lenovo Yoga 900's larger 66Wh battery helped it take the lead, while the Dell XPS 13 was a close second.

ACER ASPIRE R13
- 211

ASUS UX305
- 202

DELL XPS 13
- 246

HP ENVY
- 209

LENOVO YOGA 900
- **262**

MODEL	ACER ASPIRE R13	ASUS ZENBOOK UX305	DELL XPS 13	HP ENVY 13	LENOVO YOGA 900
DISPLAY	13.3-inch 1,920 x 1,080 pixels IPS touchscreen	13.3-inch 3,200 x 1,800 pixels IPS	13.3-inch 3,200 x 1,800 pixels IPS touchscreen	13.3-inch 3,200 x 1,800 pixels IPS	13.3-inch 3,200 x 1,800 pixels IPS touchscreen
PROCESSOR	Intel Core i7-6500U 2.5GHz, 4MB cache	Intel Core i7-5500U 2.4GHz, 4MB cache	Intel Core i7-6500U 2.5GHz, 4MB cache	Intel Core i7-6500U 2.5GHz, 4MB cache	Intel Core i7-6500U 2.5GHz, 4MB cache
MEMORY	8GB LPDDR3 SDRAM	8GB LPDDR3 SDRAM	8GB LPDDR3 SDRAM	8GB LPDDR3 SDRAM	8GB LPDDR3 SDRAM
STORAGE	512GB SSD (Dual 256GB in RAID 0)	256GB SSD	256GB SSD	256GB SSD	256GB SSD
AUDIO	Integrated speakers with Dolby Digital Plus Home Theater	ASUS SonicMaster audio system	Stereo speakers professionally tuned with Waves MaxxAudio®	Bang & Olufsen stereo speakers	JBL Stereo Speakers with Dolby DS 1.0 Home Theater Certification
PORTS	2x USB 3.0 1x USB 2.0 1x USB Type-C Thunderbolt 3 1x HDMI port Multi-format SD card reader 1x audio combo jack	2x USB 3.0 1x Micro HDMI SD/SDXC card reader 1x audio combo jack	2x USB 3.0 1x USB Type-C Thunderbolt 3 port 3-in-1 card reader 1x audio combo jack	3x USB 3.0 1x HDMI port Multi-format SD card reader 1x audio combo jack	2x USB 3.0 1 x USB Type-C 3.0 with video-out 1x DC-in with USB 2.0 4-in-1 card reader 1x audio combo jack
BATTERY SIZE	48Wh	56Wh	56Wh	45Wh	66Wh
DIMENSIONS (mm)	343.8 x 230.4 x 18.5	324 x 226 x 14.9	304 x 200 x 15	326.5 x 226 x 12.9	324 x 225 x 14.9
WEIGHT (kg)	1.6	1.3	1.29	1.27	1.29
PRICE	$1,998	$1,698	$2,299	$1,699	$2,299

AND THE BEST 13.3-INCH ULTRABOOK IS

**TEST
BEST
PERFORMANCE
HWM
SINGAPORE**

**TEST
BEST
VALUE
HWM
SINGAPORE**

DELL XPS 13

As it turns out, a good design trumps all else at the end of the day. And because these ultrabooks are so similarly specced, you'd be hard-pressed to notice real world performance differences. As a result, considerations like design, overall feature set and mobility rise to the forefront. Even though the XPS 13 is among the more expensive at $2,299, its excellent mobility and stunning edge-to-edge display put it ahead of its cheaper rivals. It features the same 13.3-inch 3,200 x 1,800 pixel display as the other ultrabooks, but in the body of an 11-inch notebook, effectively making it the smallest of the lot. When combined with its light weight, slim tapered profile and good battery life, it gains huge points in the design and mobility departments. The fact that it is also equipped with premium features like a touchscreen display and USB Type-C Thunderbolt 3 port is just icing on the cake.

HP ENVY 13

At $1,699, the new HP Envy 13 offers the best bang for the buck with specifications which rival competitors that cost over $2,000. It features an Intel Core i7-6500U processor, 8GB of DDR3 RAM, and a 256GB SSD, offering performance that goes neck-and-neck with similarly equipped, but pricier, competitors. Furthermore, its design, while plain, is exceedingly well-constructed. It may lack certain luxury features like a touchscreen display and Thunderbolt 3 port, but HP has checked all the right boxes when it comes to including key features that users will get the most utility from.

WHEN "IN-BETWEEN" IS REALLY "JUST NICE"

Top-of-the-line cameras with the latest technologies are normally out of reach of the average consumer. Give it a year or so though, and their features trickle down to the mid-range models, making these the ideal balance of performance versus value.

Text by *Marcus Wong*
Photography by *Vernon Wong*
Art Direction by *Ken Koh*

CANON EOS 760D

The EOS 760D replaces last year's EOS 700D as the most advanced consumer level camera in Canon's stable. It was released together with the EOS 750D, which shares the same sensor and most of the capabilities but has slightly less controls, and costs less at just $949.

They both have Canon's new 24.2-megapixel APS-C sensor and DIGIC 6 processor, which allows them to hit a maximum continuous shooting rate of 5fps, and go to an ISO sensitivity level of 25,600, as well as Wi-Fi connectivity and NFC pairing, but the EOS 760D comes with a touch-sensitive, fully articulating rear LCD and a top LCD info display, as well as an extra rotating control dial at the rear.

We like the implementation of the rear LCD with touch in the EOS 760D, as that gives you added versatility in terms of shooting angles, and makes it easier to dive through menus for the various settings. Used together with the Quick Control button, it pulls up a menu that puts all settings from shutter speed to aperture, ISO and even compensation and flash modes at your fingertips.

Also, being able to swing the LCD panel out fully and rotate it up or down certainly makes composition easier when shooting from down low or when you need the camera above eye-level. Meanwhile, that extra rotating dial also means that you can have one physical dial for aperture and another for shutter instead of having to hold buttons to alternate between the two functions.

Overall, the EOS 760D is a nice, compact camera overall that fits nicely into your hand. Measuring 131.9x 100.9 x 77.8mm, it isn't that much larger than some of its mirrorless counterparts, but at 520g (body only) weighs a fair bit more. Thankfully though, the handgrip on the body is deep enough to allow you to really wrap your fingers around the camera, giving you a more stable grip that you need with heavier lenses.

+ Flip out touch screen is a nice addition.

− Images tend to be very warm.

AT A GLANCE

Sensor
APS-C CMOS

Megapixels
24.2-megapixels

ISO range
100-25,600

Dimensions
131.9 x 100.9 x 77.8mm

Weight (body only)
520g

Price
$1,049.00

You can unintentionally activate video mode with the three position on/Off/Video switch.

The 760D has a standard pop-up flash good for up to 12 meters.

Swing out the LCD for more framing and viewing control.

FUJIFILM X-T10

We've long regarded the X-T10 as a value performer, considering it takes so much from Fujifilm's flagship X-T1 model while costing quite a bit less. The 16-megapixel X-Trans CMOS II sensor and EXR Processor II make its way into this midrange model, as does the Intelligent Hybrid AF system that combines the speed of Phase Detection AF with the Low Light performance of Contrast AF.

The X-T10 is slightly lighter than its older sibling at 331g, and at 118.4 x 82.8 x 40.8mm, slightly smaller too. This makes it one of the smallest in this shootout, and a very compact camera overall considering it holds a larger APS-C sensor within.

As with all mirrorless cameras, a key feature is the electronic viewfinder (EVF), and the X-T10 doesn't disappoint there, as the lag time is on par with the X-T1 at just 0.05 seconds, giving you one of the more responsive EVFs in the market. This means

you can run this camera at full burst in continuous high mode (the X-T10 does 8 fps) and still see exactly what's happening in the viewfinder because the EVF refresh rate is keeping up and not blacking out. That used to be a bugbear for people coming over from traditional viewfinders, but certainly shouldn't be an issue with this camera.

The X-T10 is also one of the most customizable cameras in this shootout, with no less than 27 options that can be assigned to the quick menu. That makes changing settings quick and easy, as your most used functions can now be one click away. Speaking of making things easy, there's also an added switch on the camera that puts it in "Auto" mode (or Advanced SR Auto mode as Fujifilm calls it). Fujifilm explains this as a provision for the times when you want to hand the camera to someone else to quickly take a photograph for you, yet want to be certain the photo will at least be properly exposed.

+

Good feature set inherited from the higher end X-T1.

−

Buffer for continuous capture is too small.

The X-T10 of the fastest and most responsive EVFs today.

Unlike the X-T1, there is a pop-up flash on the X-T10.

The X-T10 has a tilting LCD, but no touch capabilities.

NIKON D7200

The Nikon D7200 builds on the D7100 by adding improved Wi-Fi with NFC capabilities, better battery life and 60p video. It also has time-lapse capabilities, and gets the same EXPEED 4 image-processing engine and Advanced Multi-CAM 3500 II autofocus sensor as the full-frame D750, making it quite the capable camera (at least on paper).

It also gains a slight resolution bump with 24.2 million pixels compared to 24.1 million on the D7100. Owing to these improvements, the camera has a continuous rate that goes up to 6fps, and a bigger buffer that Nikon says allows for continuous capture of up to 100 shots (at JPEG Fine). It also has an ISO range of 100 to 25,600, up from the previous high of 6400 in the older camera.

Unlike the other cameras in this shootout, the D7200 is still stuck with a fixed rear LCD. It isn't touch sensitive either, so you don't get the advantage of being able to tilt your screen for awkward angles, nor do you get faster navigation via touch, much less the option to shift your AF point via touch a la the D5500 that was released earlier. Personally, we think that's a bit of a pity as these are usability features that are pretty much par for course today.

What's nice though, are its improved movie functions. The D7200 now allows you to set microphone sensitivity, frequency response, and gives you the option to enable wind noise reduction, as well as highlight display; all welcome features for movie-makers.

The inclusion of dual card slots are also a welcome feature as you can then choose to use one card for stills and the other for video, or both for video in the overflow setting. This gives you better provision for shooting more takes, giving you more options later. The D7200 has a CIPA rating of up to 1,100 frames on a single battery, so you be assured the battery life will match up to the storage capacity.

+

Good provision for extended shooting sessions with dual card slots and great battery life.

−

Camera interface feels dated .

AT A GLANCE

Sensor
APS-C DX-format CMOS

Megapixels
24.2-megapixels

ISO range
100-25,600

Dimensions
135.5 x106.5 x 76mm

Weight (body only)
675 g

Price
$1,409 (body only)

Like the Canon, the D7200's pop-up flash has a range of 12 meters.

The D7200 has improved Wi-Fi and NFC support.

The extra dial below the familiar Mode dial is to select shutter release modes.

OLYMPUS OM-D E-M5 MARK II

OM-D EM-5 Mark II is a welcome update to the popular OM-D EM-5, with the headlining features being an improved 5-axis in-body image-stabilization system, a flip-out, tilt/swivel LCD, and the inclusion of a 40-megapixel High-Res Shot mode that mostly benefits still product shooters as the subject has to stay still throughout the capture.

It retains largely the same design as the original, with the exception of the size of some of the dials, and slight changes to the proportions of the body. The grip is slightly larger than before, and the camera now feels extremely solid overall; as though it was made from a single piece of metal. Olympus says the camera is also dust-proof, splash-proof and freeze-proof, making for a system that you can really feel confident bringing with you to any situation.

There have also been improvements to the EVF and the touchscreen. The EVF has a 2.36M dot LCD, while the 3.0" touchscreen has 1.04M dots, both almost double the resolution of the previous model.

Customization is another a key improvement here, as there are also a lot more function buttons available for you to repurpose: four dedicated Fn buttons (from Fn1 to Fn4), the movie REC button, the Preview button and even the Down and Right buttons on the four-way directional controller can be reassigned, so you can customize the layout of your controls and then some. Certainly, the OM-D EM-5 Mark II seems to be most customizable camera of the lot.

Unique to the camera, is a 2x2 control lever that switches the functions assigned to the main control dials. This can be assigned to toggle between shutter/aperture and ISO/WB for example, and can again be customized to your personal preference, but can also be a little confusing if you lose track of what the dial is set to. An icon indicating the current active settings would definitely be most appreciated, but this approach seems a good way to maximize the limited space available on the camera.

+ In-body image stabilization system is largely improved.

− Control lever could be better implemented.

Up to four dedicated function (Fn) buttons can be customized.

You also get a full swivel LCD on the E-M5 Mark II.

Better grip and thumb rest design makes for a more solid feel.

SAMSUNG NX500

At first look, the NX500 looks exactly like any of the other low-end cameras in Samsung's line-up, and you could easily be forgiven for not being impressed by the average looks of it. But what it hides within though, is the same 28.2-megapixel BSI APS-C sensor, DRIMe Vs image processor, and NX AF system III that was first debuted in the company's flagship NX1 camera.

The NX500 also retains the ability to capture true 4K (4,096 x 2,160 pixels) video using the new HEVC (H.265) codec, as well having built-in wireless and a 3-inch tilting touchscreen. Battery life is respectable at 370 shots given it doesn't have a viewfinder, but you lose the top LCD and microphone/headphone port that you find on the NX1. A word about the 4K capture, notable because the NX500 will record 4K internally without the need of any external device.

That gives filmmakers a great budget option for extra angles that should be easy to mount in all sorts of locations due to its small size and light weight. Event photographers may also find it a good second camera given its relatively fast continuous burst rate of 9fps and top shutter speed of 1/6000s. The only complaint may be that the two main control dials for shutter and aperture are relatively small, making it hard for bigger hands to operate.

Honestly speaking, we found ourselves adjusting most settings via the Fn menu using the touchscreen. We really like this menu, as it literally puts all the settings at your fingertips thanks to the touch screen. That and the speedy processor makes for a very responsive camera. The rear LCD flips up a full 180-degrees and down 45-degrees, making it easy to use both overhead and below.

Something you might also find handy if you're uploading images direct from camera a lot is that the NX500 has image-editing tools that let you adjust brightness, contrast, saturation and more right all from within the camera.

+

Great menu system with plenty of features easily accessible.

−

No viewfinder of any sort.

AT A GLANCE

Sensor
APS-C BSI CMOS

Megapixels
30.7-megapixels

ISO range
100-51,200

Dimensions
119.5 x 63.6 x 42.5 mm

Weight (body only)
292g

Price
$1,159 (with 16-50 kit lens)

The NX500 is very mobile friendly with a dedicated button to access wireless options.

Native 4K recording without need for external add-ons.

LCD can be flipped up 180-degrees for selfies.

IMAGE QUALITY & PERFORMANCE - CANON EOS 760D

The EOS 760D is in generally a fairly snappy camera, with a good focusing system that remains decently accurate even in low light. However, compared to the other cameras in this shootout, we found that images captured were slightly soft. Despite being rated for 95% coverage, the viewfinder felt like it was the darkest of the group, and so didn't feel like the best to compose with. It also seems as though the exposure system tends to try very hard to preserve highlights, resulting in images that look severely underexposed. More troublesome though, is the fact that a significant amount of color noise shows up from ISO 3200 onwards, making images taken at ISO 6400 and above largely unusable. That's really quite a pity, as the images seemed to still hold detail well.

You can see that detail starts to fall off past the lamp post.

At ISO 12,800 the amount of color noise present overwhelms the amount of detail the camera is able to preserve.

IMAGE QUALITY & PERFORMANCE - FUJIFILM X-T10

We've always enjoyed taking pictures with the X-T10, and that's because of the responsiveness of the camera – from the menu systems and controls down to the speedy autofocus and the 8fps continuous shooting frame rate. That last point however comes with a big caveat, as the X-T10's buffer is just 8 frames – exactly the maximum amount the camera can take. This means you have to time your shots really well because there will be a bit of lag between bursts. That aside, the autofocus system certainly is one of the better ones available; once we worked out which mode to use and how to adjust the focus point appropriately. Strangely though, the auto white balance doesn't quite seem to handle tungsten light that well as that was the only instance wherein our pictures were overly orange.
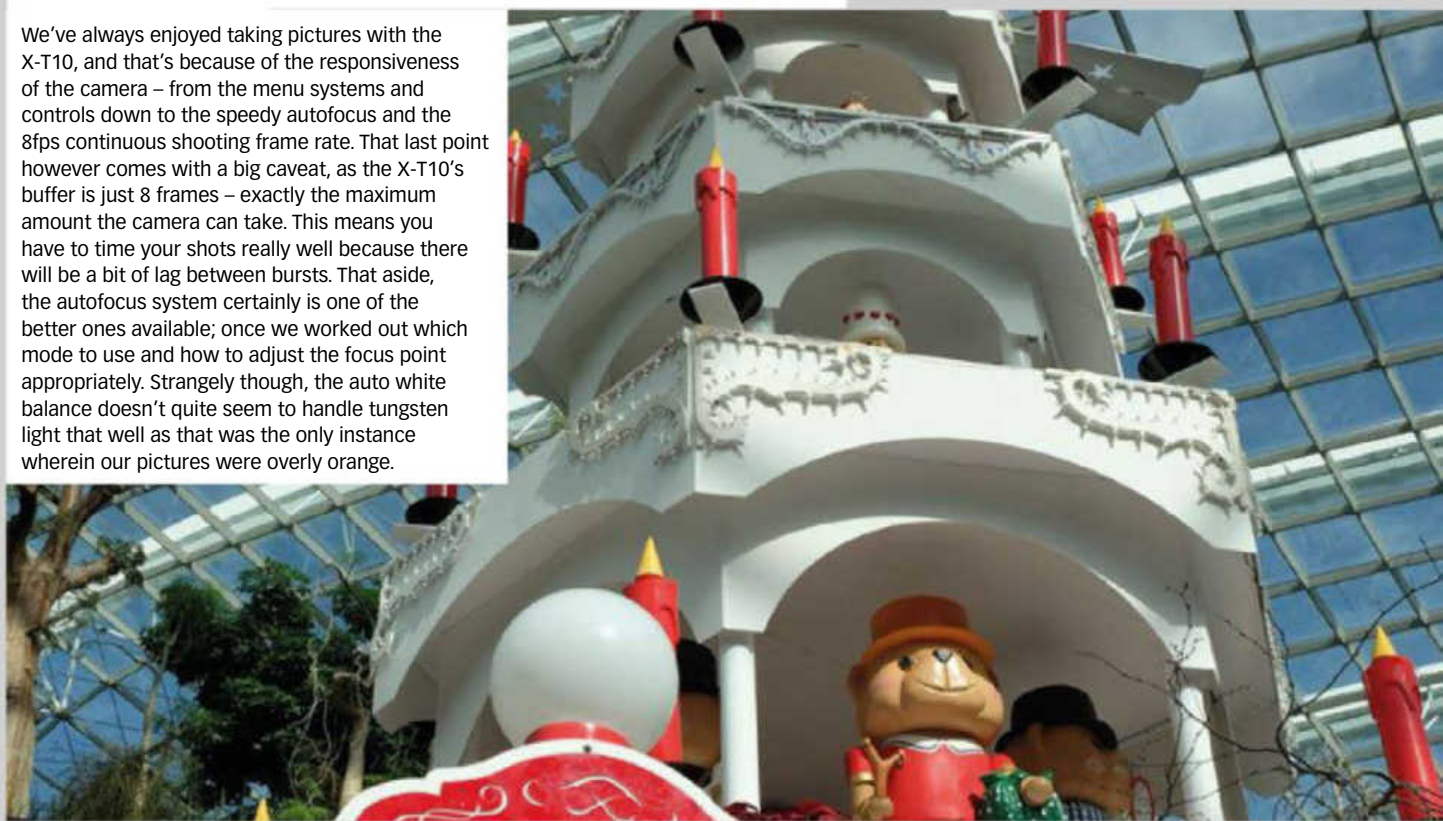
The X-T10 offers a good balance between depth of field and detail.

There's good detail and little noise with the X-T10, even up to ISO 12,800.

IMAGE QUALITY & PERFORMANCE - NIKON D7200

The thing that stood out the most for the D7200 in this shootout was the incredible battery life. Certainly, it was the one camera that kept on going when the rest were almost flat. The camera turned in good autofocus performance, and the combination of having a shutter that maxes out at 1/8000s and a buffer that allows the camera to take up to 100 shots in JPEG meant we were really able fire away to catch the shot. We found that the camera also tends to underexpose to preserve images, but only by about half a stop, which leaves a more acceptable image compared to the Canon 760D. Unfortunately, it shares the Canon 760D's problem – images are fairly noisy compared to the others at ISO levels above 6400, with noticeable color noise from 12,800.
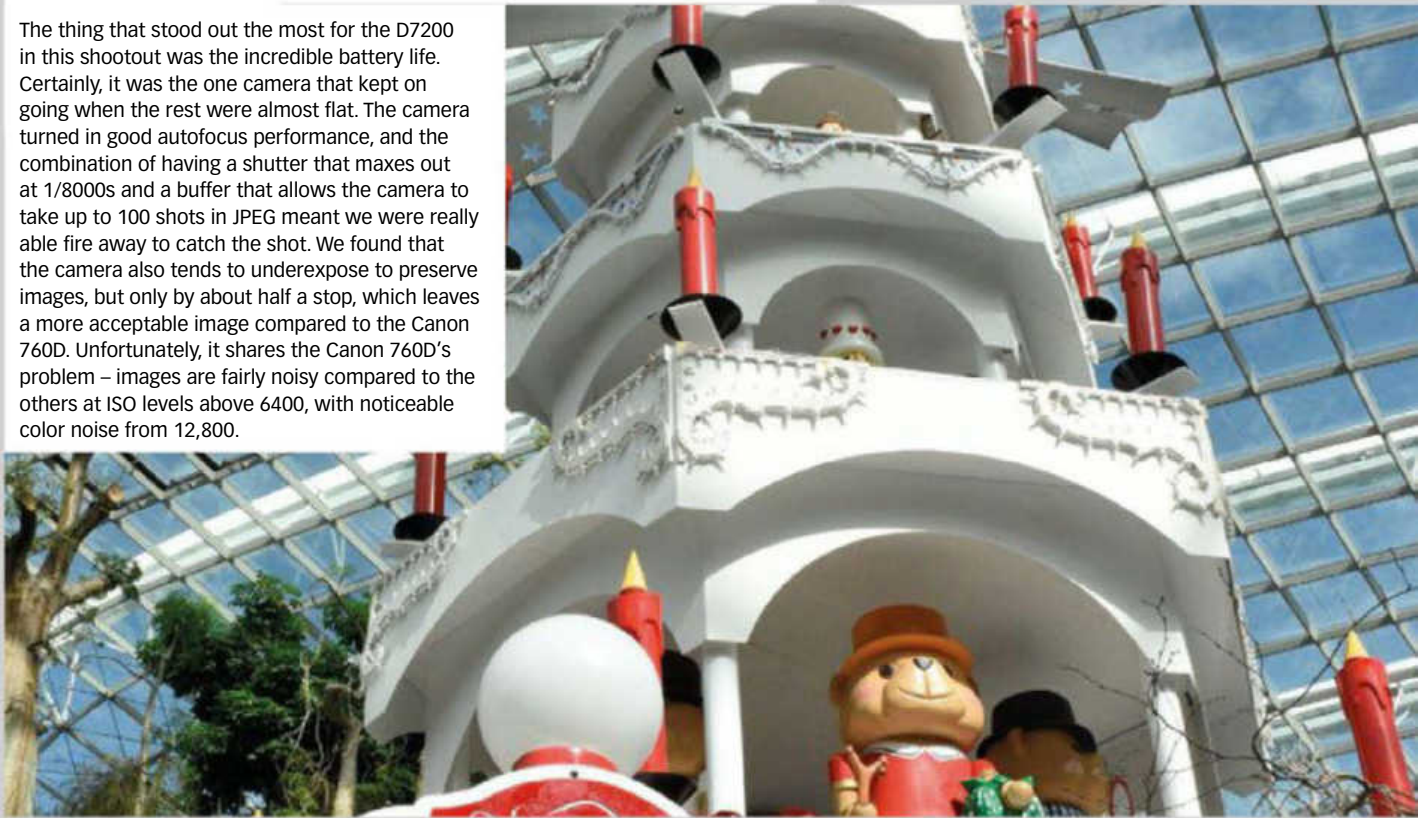
Color balance outdoors seems to be fairly accurate.

**The image from the D7200 at ISO 12,800 also has plenty of color noise, while looking slightly underexposed.**

IMAGE QUALITY & PERFORMANCE - OLYMPUS OMD E-M5 MARK II

One of the biggest improvements for this camera is the improved 5-axis in-body image stabilization that works in both stills and videos, and it certainly showed. The effects were more obvious with video than with stills (we only managed handholding up to 1/13s for stills capture), but the fact that you get this capability with every lens placed on the body is certainly a boon. Autofocus accuracy does take a bit of hit in lowlight though, as we found the camera would tend to hunt more, but in good light it's certainly every bit as fast (and accurate) as the others. One thing that did surprise us though, was that the high ISO performance turned out to be one of the best of the group, as the sensor held detail well up to ISO 6400.

The E-M5 Mark II seems to have the most accurate auto white balance.
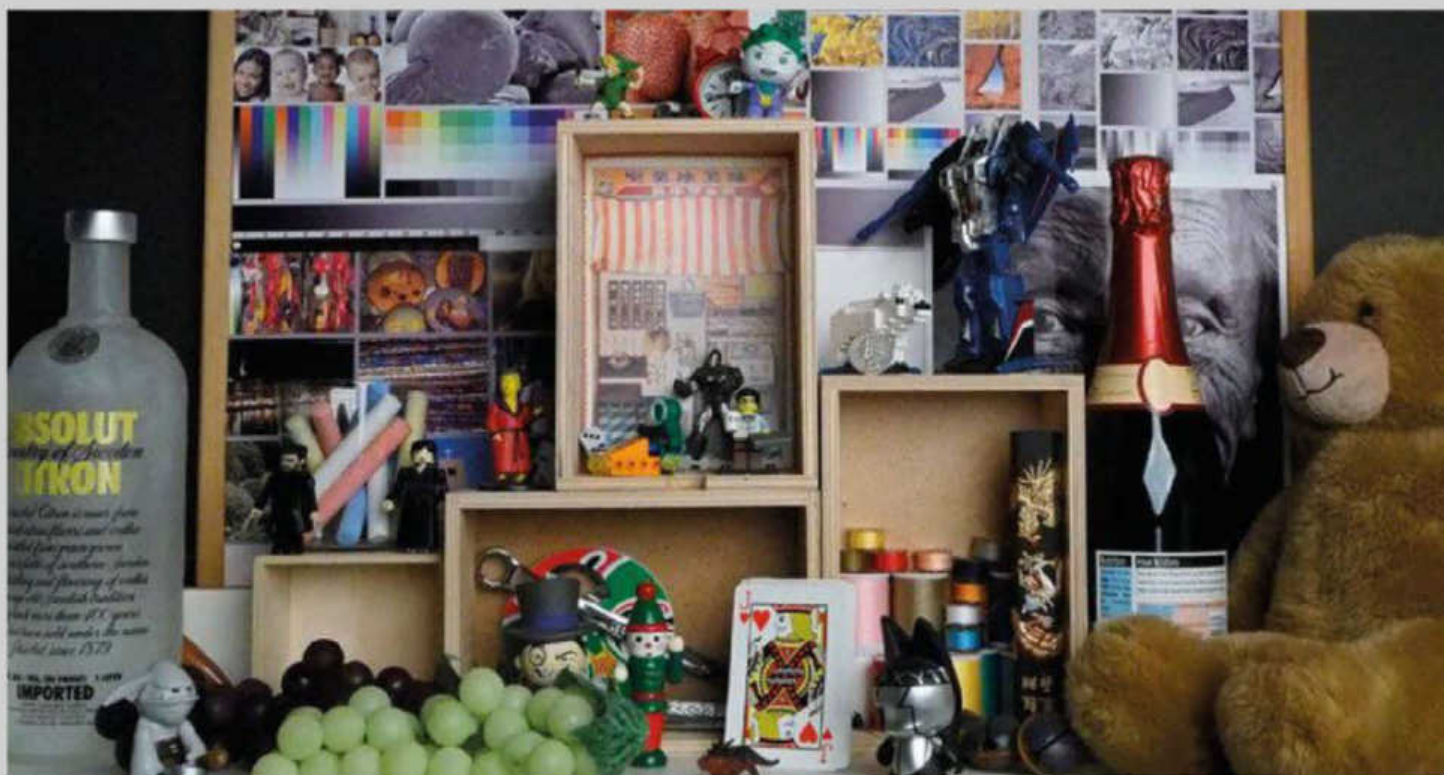
Impressively, it's only at ISO 12,800 that the writing on the bottle completely breaks up.

IMAGE QUALITY & PERFORMANCE - SAMSUNG NX500

The NX500 has perhaps the best overall feature set, with great tools for both stills and video. The camera does a pretty good job with colors as the auto white balance is generally spot on, and the auto exposure system also seemed to be pretty accurate, as no additional adjustments were needed in post. One thing we did find though, is that the autofocus slows down noticeably in low-light despite the camera having the most AF points of the group to draw from. Still, images captured have good detail and contrast from the lower ISO levels all the way up to ISO 6400, after which the incredibly over-aggressive noise reduction blurs everything into mush, which is a real pity because there is good detail to be had from the BSI sensor.
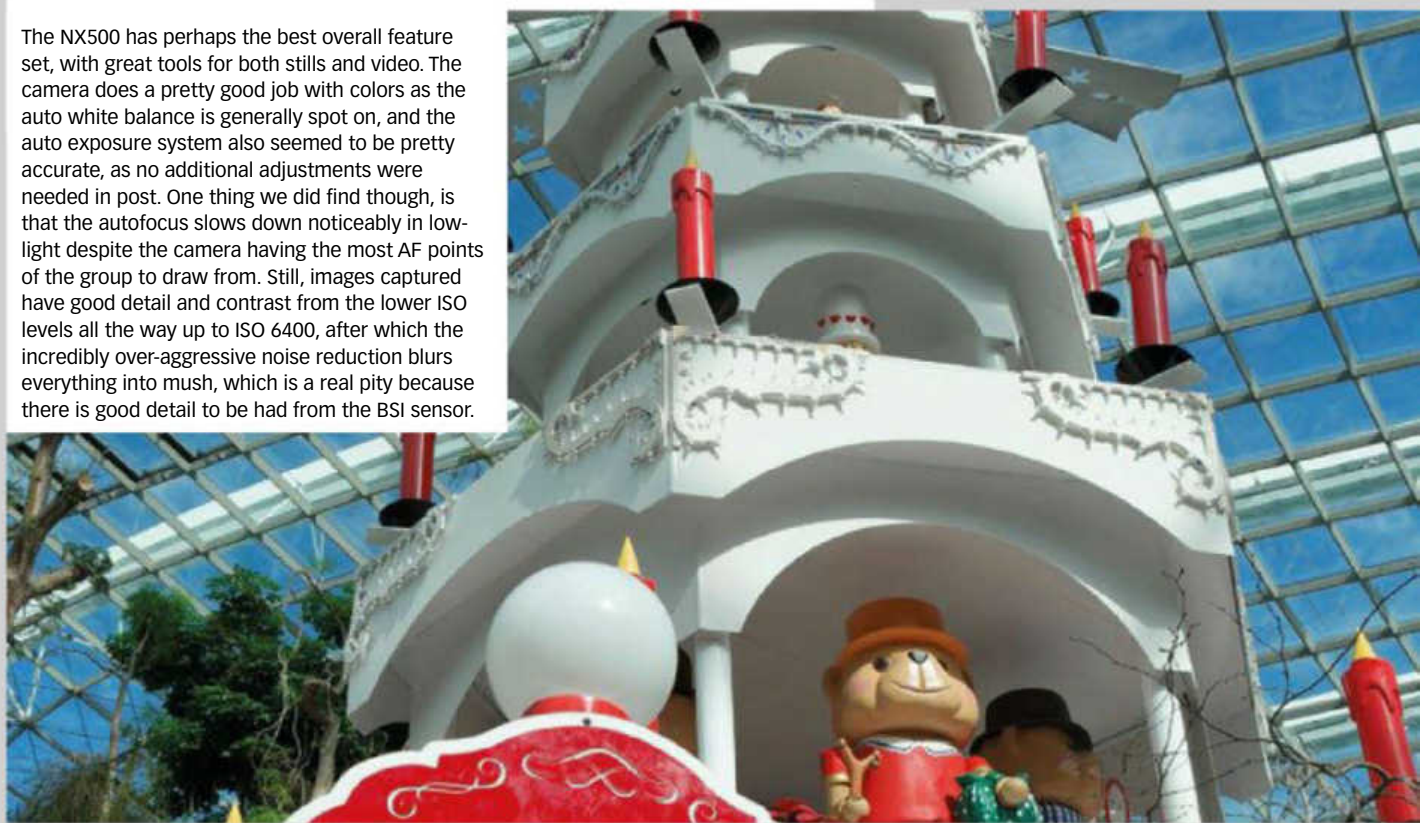
Images from the NX500 have the most detail, thanks to having the sensor with the highest resolution.

Surprisingly, once past ISO 6400, detail really starts to turn to mush.

	CANON EOS 760D	FUJIFILM X-T10	NIKON D7200	OLYMPUS OMD E-M5 MARK II	SAMSUNG NX500
MOUNT	Canon EF	Fujifilm X	Nikon F	Micro Four Thirds	NX Mount
FOCAL LENGTH MULTIPLIER	1.6x	1.5x	1.5x	2.0x	1.5x
SENSOR	APS-C CMOS	APS-C X-Trans CMOS II	APS-C DX-format CMOS	4/3 Live MOS	APS-C BSI CMOS
SENSOR SIZE	22.3 x 14.9mm	23.6 x 15.6mm	23.5 x 15.6mm	17.3 x 13mm	23.5 x 15.7 mm
EFFECTIVE PIXELS	24.2-megapixels	16.3-megapixels	24.2-megapixels	16.1-megapixels	28.2-megapixels
NUMBER OF FOCUS POINTS	19 cross-type	77	51 (15 cross type)	81	205 Phase Detect 209 Contrast Detect
ISO SENSITIVITY	100-25,600	100-51,200	100-25,600 (expandable to 102,400 in monochrome only)	100-25,600	100-51,200
MAXIMUM SHUTTER SPEED	1/4000s	1/32000s	1/8000s	1/8000	1/6000
MAX CONTINUOUS FRAME RATE	5.0 fps	8.0 fps	7.0 fps	10.0 fps	9.0 fps
FLASH	Yes	Yes	Yes	No	No
MAX MOVIE RESOLUTION	1920x1080 29.97p	1920 x 1080 60p	1920 x 1080 60p	1920 x 1080 60p	4,096 x 2,160 (24 fps)
MONITOR	3", 1.04 million dots, Swing-type TFT LCD with touch, approx.	3",920K-dot, Tilt type LCD	3", 1.04 million dots	3", Vari-angle with tilt, 1.04 million dots	3", Super AMOLED with touch and tilt, 1.04million dots
SIZE	131.9 x 100.9 x 77.8mm	118.4 x 82.8 x 40.8mm	135.5 x106.5 x 76mm	123.7×85.0×44.5 mm	119.5 x 63.6 x 42.5 mm
WEIGHT (BODY ONLY)	520g	331g	675 g	417g	292g
BATTERY LIFE (STILL IMAGES)	440 frames	350 frames	1100 frames	310 frames	370 shots
PRICE	$1,049.00 (body only)	$1,299 (body only)	$1,409 (body only)	$1,398 (body only)	$1,159 (16-50 kit lens)

AND THE BEST MID-RANGE INTERCHANGEABLE LENS CAMERA IS

FUJIFILM X-T10

To be honest, we were expecting this to go to one of traditional DSLRs given their respective feature sets, but the X-T10 proved once again that it's not just about pixel counts when it comes to making good images. Images taken at ISO levels up to 12,800 are very usable, while those taken at ISO 25,600 can also be used after a bit of sharpening so that certainly increases the number of situations whereby the camera can get you images. Apart from the incredibly small buffer for continuous capture, there's little we would change given the price, and even then it's one of the cheaper options. So, take good handling paired with great image performance and good value, and you have yourself an easy winner.

SAMSUNG NX500

We really shouldn't be surprised by the performance of this camera given that it's largely based on the NX1. Still, the value Samsung managed to squeeze into the NX500 makes it stand out well compared against many of its more established competition. Images taken with the NX500 have good detail and look great straight out of camera. If it was sold as a body-only set, it would make it a no-brainer purchase, but certainly for a complete system (with a kit lens) retailing for under $1,200 that turns in this level of performance out of the box, you'll be hard pressed to find a better value performer.

AT A GLANCE

Driver
10.8mm

Frequency Range
20 - 16,000Hz

Charging Time
2.5 hours

Dimensions
20 x 26 x 23mm

Price
$379

A small microphone measures ambient noise, and the ANC System here is responsible for cancelling it out.

CONCLUSION

Definitely good enough as an earpiece with decent sound quality and active noise cancellation, even if the price tag leans on the exclusive end.

TESTED & RATED

7.5/10

HWM
SINGAPORE

BASK IN LUXURIOUS SILENCE

B&O BeoPlay H3 ANC

B&O may be a premium brand, but the BeoPlay H3 ANC is simple. The entire unit is made from simple round cables and a pair of rubber joints leading to its metal driver housing. It uses a memory foam-type ear bud that holds up the BeoPlay H3 ANC's earpiece in place, and the simple construction combined with the lightweight wires makes the device easy and comfortable to wear.

Out of the box, it has a soft pouch, a variety of ear-tip sizes and a flight adaptor. The 20-hour, rechargeable ANC System itself is its main draw, and you turn it on or off simply by nudging the toggle button on the sides. The earpiece uses a provided USB cable to charge, but it can still go on even without any juice left in the unit. Our main concern was the combination of both soft plastic wires that lead into the ANC System without much protection at the joints. We're not really a fan of the hooked 3.5mm audio jack either, since that's just more opportunities for it to fray. The noise-cancelling itself works like any other ANC unit, effectively silencing air-conditioning, but not the murmur of the crowd.

Sound quality of the BeoPlay H3 ANC is good – it features a well-weighted bass that sounds natural, and it balances the mid-range and treble well. It comes with a sound profile similar to listening to songs in an enclosed, soundproof booth, making it feel personal and quiet. Out of our four test songs, Hotel California by The Eagles seems to fare well with emphasis on live instruments and well-spaced soundstage, even if it does not have the fill and richness of each strum. Tiesto's Elements of Life wasn't as heart-pounding or impactful as we'd like, even though the separation between each snyth was good. It lacked the punch or the ability to handle higher frequencies without distorting.

The B&O BeoPlay H3 ANC comes across as a rather no-frills earpiece, with great noise-cancelling capabilities and decent audio performance, that's also light enough for long periods of use. As simple as it is, it still comes with some minor flaws – mostly from a design and physical standpoint, but it's still a good entry level product by the usual Bang & Olufsen standpoint.

by Liu Hongzuo

PICTURES **B&O**

SMALL FIT, BIG SOUND

Klispch Reference R6 on-ear

Klipsch's R6 and R6i in-ear headphones have been quite the popular addition to their stable, so they've gone and made a set of on-ear headphones based on the same audio design, to offer those who prefer not to stick things into their ears, with the same audio experience.

The headphones themselves follow a somewhat similar design to the Reference on-ear with an elongated design, but take a much more minimalistic, all-black approach highlighted by silver trimmings. The headphones also feature fold-flat swivel cups, and so should stow away nicely in your bag as the set is pretty compact overall.

We must say the fit provided by the R6 on-ears is pretty good, and that's thanks to the use of high-density memory foam cups that easily take the 160g weight off your ears. The leather headband helped the headphone rest nicely on our heads too, and overall the fit provided was good.

In terms of audio, the R6 is powered by Klipsch's own KG-150 dynamic moving coil speaker, which is rated to deliver a frequency response of 20Hz-20kHz, with an impedance of just 32ohm. Klipsch claims the driver delivers a "warm, authentic sound", and there certainly does seem to be a good degree of naturalness to them.

On our audio testing, we found Scar Tissue by the Red Hot Chili Peppers to be quite an enjoyable listen. Vocals from Anthony Kiedis render pretty well, and you can quite easily pick out the guitar work behind all the vocals. Put on an epic track like November Rain by Guns N' Roses, and you'll find there is a great amount of detail to be had, with a fairly large soundstage to match. Also, this is one set of headphones that really doesn't mind being played at close to full blast. Crank the volume up and they'll duly oblige. Be warned though, these headphones can go loud. Really loud.

On our own test tracks, we found that it performed best on Hotel California by The Eagles with the piece playing perfectly to the R6 on-ear's strengths. You have a strong leading mid tone sound from the main guitars, plenty of details to resolve thanks to the overlap of instruments and vocals, and a deep thumping bass that leads the piece throughout.

Overall, they deliver over most genres. Our one criticism would be that they might be a little too heavy on the low end, but for this price range, certainly something we'd heartily recommend.

by *Marcus Wong*

AT A GLANCE

Frequency Response
20-20,000 Hz

Sensitivity
110 dB

Impendance
32 ohms

Weight
160.3g without cable and connector

Price
$169

The ear cups swivel down for storage.

CONCLUSION

A light, compact option that delivers great sound.

TESTED & RATED

8.0/10

HWM
SINGAPORE

The ZenWatch 2 now has a side button that turns the display on and off.

A STANDOUT SMARTWATCH

ASUS ZenWatch 2

The ZenWatch 2 keeps the same elegant design language that made the original ZenWatch a success, and has a square case made from stainless steel. Like last year's ZenWatch, it's a stylish unisex design that looks classy and understated. A new addition is a crown on the right side, although unlike the Apple Watch, this one is just a button that turns the screen on and off (or press-and-hold to launch the apps screen).

ASUS also added a smaller 45mm case along with the standard 49mm version. Both take standard straps; the 45mm case uses 18mm straps while the 49mm case uses 22mm straps. You also get a choice of colors this time, with gunmetal grey and rose gold joining the standard silver color.

The smaller model has a 1.45-inch AMOLED display, with a 280 x 280 pixels resolution (273ppi), while the larger ZenWatch 2 has a 1.63-inch AMOLED display with a 320 x 320 pixels resolution (277ppi). One of my biggest complaints about last year's ZenWatch was a very apparent haziness to its display. Fortunately, this has completely disappeared and now looks sharp, vibrant and crisp. A sheet of gently curved Corning Gorilla Glass 3 protects the display and adds a classy appeal.

If I have one complaint, it's that the bezels around the screen are a tad big. I mentioned this last year too, but it doesn't seem to have gotten much better. Thanks to the AMOLED display's great contrast, dark watch faces look best as the sides of the display blend in perfectly with the bezel, but the huge bezels are very noticeable if you prefer white watch faces.

Under the hood, the ZenWatch is basically exactly the same as last year's model (as well as most other Android Wear watches on the market) with a Qualcomm Snapdragon 400 processor and 512 MB RAM. Performance is smooth and snappy though, with no noticeable stuttering or lag navigating the menus or watch faces.

Along with the standard Android Wear app, ASUS recommends you download a whole host of ASUS apps to use with the ZenWatch 2: ASUS ZenWatch Manager, FaceDesigner, ZenWatch Wellness, ZenWatch Music, ZenWatch Remote Camera, and Remote Link.

ZenWatch Manager basically overtakes Android Wear as your default watch

TAP FOR GALLERY

PICTURES ASUS

The ZenWatch 2 takes standard 18mm/22mm watch straps.

CONCLUSION

The safe, affordable and feature-rich entry into the world of smartwatches that you can't go wrong with.

app, with loads of extra functionality including Remote Call Control, to answer and control phone calls from the watch, and Unlock My Phone, to unlock your phone by touching the watch face (this works with any Android phone, not just ASUS ones). If you've misplaced your watch, Find My Watch will help locate it by sending a signal to make it vibrate and flash. Conversely, Find My Phone lets you do the same thing from your watch, making your smartphone vibrate, flash and ring (it works even if your phone is set to silent).

ZenWatch Manager also adds about 50 more exclusive watch faces grouped into five categories: Sport, Simplicity, Urban, Digital and Youth. Each watch face can be individually configured to show more or less information, like additional time zones, weather information, step counts and more (similar to the Apple Watch's complications). If you're

creative, you can create your own watch face using the FaceDesigner app.

Unfortunately, there's no iOS version, so iPhone users, you're stuck with Android Wear's limited iOS functionality.

While it may seem like a pain to have to download all of these extra apps when you set up your ZenWatch, we have to applaud ASUS for adding more functionality on top of the basic Android Wear. If you can't be bothered to get them, the ZenWatch 2 is perfectly usable on its own, but the extra features are definitely worth it.

The only place where the two ZenWatch 2 models differ internally is battery capacity. The larger comes with a 400mAh battery, while the smaller version has a 300mAh unit. Battery life was decent but not outstanding, lasting about 15-18 hours on a single charge. If you make a lot of phone calls through the ZenWatch Manager app, expect battery life to go

down further.

The ZenWatch 2 is a great evolution of last year's ZenWatch and cements ASUS as a major player in the wearables market. The inclusion of proprietary apps set the ZenWatch 2 apart. Rather than just another run-of-the-mill Android Wear watch, you get something a bit more exclusive and special. Finally, knocking $70 off the original price is pretty much unheard of, and its new price of $229 is fantastic value, especially when smartwatches seem to be getting more and more expensive.

by James Lu

TESTED & RATED

8.5/10

HWM
SINGAPORE

OS
Android Wear

Processor
Qualcomm Snapdragon 400 quad-core 1.2GHz

Display
42mm: 1.37-inch 360 x 325 (263ppi) LCD / 46mm: 1.56-inch 360 x 330 (233ppi) LCD

RAM
512MB

Storage
4GB

Dimensions
42mm: 42 x 11.4mm / 46mm: 46 x 11.4mm

The new 360 still has a "flat tire" on its display that spoils the circular screen effect.

The new lugs lets you switch out the strap for any standard watch strap.

TAP FOR GALLERY

BETTER, BUT NO CIGAR

Motorola Moto 360 (2nd Gen)

The original Motorola Moto 360 was a favorite last year. With its minimalist round design, and stainless steel and glass build, it was one of the few smartwatches that didn't make you look like a total nerd. This year, there's a new Moto 360. It comes in two sizes (and three editions): a black 42mm model, a rose gold 42mm 'ladies' edition, and a silver 46mm version (the same size as last year's).

Unfortunately, whichever version you like, they're all more exorbitant, coming in at $479 (42mm black), $499 (42mm rose gold) and $549 (46mm silver) respectively. The design hasn't changed much from last year, with

the same chunky round stainless steel case and a glass display that's slightly raised above the case with an angled bevel on the edge. This is to make swiping the watch face easier, but it also causes some weird distortion towards the edge of the screen.

The biggest difference, design-wise, is that the new Moto 360 now has lugs on the top and bottom that make it look more like a watch than last year's disc-on-a-strap style, but also less unique. The lugs also let you easily replace the watch strap.

Another minor change is that the side button has been moved up from the

3 o'clock position to the 2 o'clock position. It's still not a real watch crown though and doesn't rotate, so you can't use it to scroll through apps: it only dims the display and accesses the app menu.

The 42mm Moto 360 uses a 1.37-inch display with a 360 x 325 pixels resolution (263ppi), while the 46mm model has a 1.56-inch display with a 360 x 330 pixels resolution (233ppi). That's a slight improvement from last year. Both displays look decent enough, but aren't as bright as the AMOLED displays found on ASUS ZenWatch 2, Samsung Gear S2 or Huawei Watch. As a result, legibility, especially under bright

light, just isn't as good. For what it's worth, those other watches all have higher resolutions too.

Like last year's model, the Moto 360's display isn't a complete circle - there's a black bar at the bottom of the screen. The bar, which many Moto 360 users refer to as the "flat tire" is where the ambient light sensor is housed. This light sensor lets the display have an always-on mode that automatically adjusts the display brightness according to your surroundings. It sounds convenient, but in my opinion, not worth the cost of cutting out a portion of the screen. Furthermore, I found the auto brightness to be a little slow to adjust and it generally sets a lower brightness level than I would want.

Motorola claims that the ambient light "flat tire" is necessary, but since every other round smartwatch out there doesn't include

it, I really don't think it is. It continues to be a real eyesore on light-colored watch faces and pretty much makes any non-black watch face look bad.

As expected, the Moto 360 runs on Android Wear. Motorola has included some exclusive new watch faces with tappable widgets that can display weather, step count, battery, day/date, and more. Having said that, these watch faces have also been added to the older Moto 360 via software updates, so functionally, the watch is no different from the older one.

Motorola has upgraded the fitness-tracking features in the new Moto 360 though, and it can now count steps, read heart rate and estimate calorie burn. There's also a dedicated smartphone companion app called Moto Body to help you track your progress.

Internally, the new Moto 360 has gotten a few upgrades. You get a

standard 1.2GHz quad-core Snapdragon 400 processor, 512MB of RAM and 4GB of internal storage. While this is a nice improvement over last year's plodding Texas Instruments OMAP 3 processor, it's just playing catch up to other Android Wear smartwatches.

As for battery life, the 42mm Moto 360 has a 300mAh battery, while the 46mm version has a 400mAh battery. Our 42mm unit lasted about 15 hours of moderate usage. Charging is done via a simple wireless charging dock that automatically displays a nightstand clock mode when charging.

While we loved the original Moto 360 for its stylish, stand-out design, now that there a ton of similar round-faced smartwatches out there, the 2015 model doesn't have quite the same appeal.

by *James Lu*

CONCLUSION

Still a gorgeous smartwatch, but there aren't enough improvements to justify its new higher price point.

TESTED & RATED

7.0/10

HWM
SINGAPORE

The G29 is an upgraded version of the G27, now for the PS4. If all you need is a driving wheel for the PS3, you can probably pick up the former at a discount instead.

The G29 has leds on its wheel that lets you know when it's time to shift gears, though it's largely useless since your attention will be focused on your display instead.

A WHEEL AND SHIFTER COMBO FOR THE AGES

Logitech G29 Driving Force Racing Wheel and Shifter

Peripherals and gaming go hand-in-hand. They enhance gameplay for various genres and offer a bit of realism away from button mashing the controller on your couch. And if you're a driving sim fan, the Logitech G29 is probably what you've been lusting after since E3 last year.

The G29 is the successor to the G27, which was launched way back in 2009. On first looks, it's quite legit, with a myriad of buttons on the wheel face. Every DualShock 4 button is replicated and labeled clearly, although it might feel awkward at first to navigate using only a digital thumbpad sans the absense of analog sticks.

The wheel itself is 27cm in diameter, with leather grips over a metal frame. It's sturdy and solidly built. The leather grip is similar in design the G27, and very comfortable to hold onto for long periods of gaming, even if you tend to have sweaty palms after while.

Setup is incredibly easy, you just have to plug in the pedals to the base of the wheel, then the optional Driving Force Shifter (if you have it) and the adapter plug. The wheel doesn't run on USB power, thus you will be required to have a power outlet nearby.

While the wheel itself is sturdy, the two levers used to secure the wheel can be

a bit finicky to use. Our unit had a lever that required quite a bit of effort to lock into place, which sometimes got unlocked while the wheel was in use. Make sure you give yours a thorough check when buying and before you play.

The G29 has two metal paddles to handle gear shifts, which is great if you're into F1 racing sims, but since you're already splurging for the wheel, might as well go all the way and grab the Driving Force Shifter as well. It's a great companion to the wheel and emulates a stick shift admirably. Shifting using it is a dream, as the tactile sensation adds a whole level of immersion to the experience. Like the wheel, it too secures to a surface via levers, though the ones on the shifter worked perfectly.

The other part of the G29 setup is the pedal board, which like the wheel, is a sturdy piece of equipment. The three pedals (accelerator, brake and clutch) on the board have different tension each, which feels like you're in a real car, though the brake pedal felt a bit too stiff.

The G29 wheel performs rather well. It was tested on both Project Cars and Drive Club on the PS4 and required no extra calibration to get it to work. The force feedback on the wheel worked exceptionally well, which is tied to its dual motor system the wheel uses for its turning action and force feedback. The gear system used in the G29 is unlike other rival racing wheels which use belts. The gears are what gives the wheel a 'notched' or 'stepped' feel, which detracts from the realism a bit. The force feedback function is also a bit noisy, though you'll never notice it if you're playing with the TV at a decent volume. It also gets a bit warm after continued use, as the gears and machinery in the wheel's base work as you play.

There aren't a lot of options for a great driving wheel on the PS4 if you're a hardcore racing fan. While there are other cheaper options out there that work for the console, the G29 Driving Force Racing Wheel is certainly one of the best options money can buy. The fact that it also works on a PC, as well as a PS3 is just icing on the cake. As befits its premium cost, it's an impressive and solid piece of machinery that not only works well but feels great as well.

Also, while the Driving Force Shifter is an optional part of the package, it's a heavily recommended one as manually shifting gears using the Shifter is a totally different experience than just using the metal pedals on the G29. It's a shame that the Shifter costs so much and doesn't come standard with the G29 wheel.

by *Salehuddin Husin*

CONCLUSION

Great construction and performance make it worth the price for optimum driving experience, especially with the optional shifter.

TESTED & RATED

8.0/10

HWM
SINGAPORE

AT A GLANCE

Panel Type
OLED

OS
WebOS 2.0

HDMI Inputs
3

USB Ports
3

Price
$6,999 (55-inch)
$10,999 (65-inch)

TEST EDITOR'S CHOICE
HWM SINGAPORE

You can click, point, scroll, or use voice commands on the LG Magic Remote.

CONCLUSION

Thanks to OLED, the picture quality on the LG EG960T trumps any LCD TV we've seen yet.

TESTED & RATED

9.5/10

HWM SINGAPORE

THESE BLACKS ARE TO DIE FOR

LG EG960T

The LG EG960T is a curved OLED 4K UHD TV. Unlike LCD TVs that require a light source made up of tiny LEDs, OLED pixels produce their own light. The result: infinite contrast with blacks to die for. LG has already been producing 1080p OLED TVs, but by merging 4K with OLED on the EG960T, it may have just attained the holy grail of TVs.

If you ignore the section that houses ports, the EG960T is a pencil-thin TV with matching bezels. To create a floating TV effect, the panel is propped up by a piece of see-through acrylic with a silver metallic base. The space saved from not having a backlight unit is probably one reason why LG chose to keep all hardware components within the chassis unlike Samsung's flagship 4K TVs that use a breakout box. Of course, both implementations have pros and cons. In Samsung's case, you can sort of half-upgrade the TV down the road by replacing the box.

Connections-wise, you get three HDMI inputs, three USB ports (two USB 2.0, one USB 3.0), and one headphone output. I was hoping to see at least one more HDMI port though, because you'd be left with two if one of them is used for ARC (audio return channel). Other features like wired and wireless connectivity, HEVC decoding, HDMI 2.0 with HDCP 2.2 are standard TVs of this class. On the software side of things, the TV's WebOS 2.0-driven interface is definitely pretty looking. Aided by a quad-core CPU and 3GB of RAM, it was noticeably faster than earlier WebOS 1.0-based models.

Picture quality is exceptional on the EG960T. The only TV that can stand up to it now is the Samsung JS9500, an LCD TV using quantum dot technology.

In my tests, in areas of screen uniformity, brightness, and motion resolution, the Samsung may fare better. But the EG960T had better viewing angles, a more enjoyable 3D performance (high resolution with no crosstalk), and possessed chart-topping black-level response. In a way, the vastly superior black levels more than compensated the areas it was weak in. Even non-technical viewers preferred the EG960T most of the time during a side-by-side comparison.

If you're willing to pay for the best picture quality (the 55-inch version costs $6,999, the 65-inch $10,999), there's no better choice than the LG EG960T. My only real complain is that LG is reserving HDR support for newer models coming later this year.

by Ng Chong Seng

A CLOUD TO CALL YOUR OWN

Seagate Personal Cloud (2-Bay)

The Seagate Personal Cloud connects to routers via Ethernet and it has two USB ports for expanding storage.

The Personal Cloud is Seagate's newest network-attached storage system and it is targeted at mainstream users who do not necessarily want to know what a NAS is and just need a simple, fuss-free way to backup their content wirelessly or their own personal cloud storage.

The Personal Cloud is available as a single- or two-bay model, with the two-bay variants supporting up to 8TB of capacity. The difference between the two is that with the two-bay variants, users can choose to configure their drives in either RAID 0 (striping) for performance, or RAID 1 (mirroring) for redundancy. Trust us; mirroring is the wiser option here. The drives can be easily accessed and replaced or upgraded by users simply by removing the top panel.

The Personal Cloud comes in black and has a rectangular shape that makes it resemble a Blu-ray player. The two-bay version of the Personal Cloud is also noticeably wider, because the hard disk bays are positioned side by side. There's a LED status indicator help front to let users tell at a glance if the device is working properly, and at the side is a single USB 3.0 port and at the rear is another USB 2.0 port. These ports can be used for expanding storage. There's also an Ethernet jack at the rear which is to be connected to your router.

Setting up the Seagate Personal Cloud was a breeze, simply enter the device's URL in your browser and follow the on-screen instructions. The setup process will also help you create your own password-protected folder on the server. Mac users will be able to backup wirelessly to the Seagate Personal Cloud using OS X's Time Machine, but PC users will need to download the Seagate Dashboard utility. The Seagate Dashboard utility is easy to use and also provides backups of your social media accounts like Facebook and Flicker, which is a nice touch. Finally, an application called SDrive is required for both PC and Mac users to access the drive remotely. Users can also access contents on their Personal Cloud devices remotely using the Seagate Media app - available free for Android and iOS users.

Performance is nothing to shout about, but the type of users considering the Seagate Personal Cloud is searching for something easy to use more than anything else. And the in this respect, it is certainly a worthy choice.

by Kenny Yeo

CONCLUSION

An easy, effective and secure way for users to setup a personal cloud at home.

TESTED & RATED

8.0 /10

HWM
SINGAPORE

AT A GLANCE

Brightness
3,600 lumens

Contrast Ratio
12,000:1

Zoom Ratio
1.2x

Lamp Life
5,000 hours

Price
$1,099

The bundled white remote is small and doesn't have a lot of buttons.

CONCLUSION

A bright and performing projector suitable for classroom and boardroom use. Best of all, it's not expensive.

TESTED & RATED

8.5/10

HWM
SINGAPORE

THE AFFORDABLE MEETING ILLUMINATOR

Panasonic PT-LW362

One advantage of DLP projectors over 3LCD is that you don't need to change their filters as often. While the PT-LW362 is a 3LCD projector, Panasonic has designed it in such a way that you only need to do it when you replace the lamp. And if you were to use the most energy-saving Eco 2 mode, that's a long 10,000 hours. Additionally, the filter is easy to get to because the panel is conveniently located on the side.

Equipped with one HDMI, two D-sub, and one composite video inputs, the PT-LW362, which has a native XGA (1,280 x 800) resolution, has you pretty much covered video-wise. For more bang for buck, Panasonic even manages to squeeze in a LAN jack, two USB ports (for functions like USB Display and USB memory viewer) and a monitor output. For admins,

the LAN jack is compatible with PJLink control; useful if you need to manage different brands of projectors.

While wireless connectivity isn't built-in, an optional USB module can be purchased. If you decide to go that route, there are free Windows and iOS/Android apps (e.g., Pixelworks' VueMagic Pro) that you can use to conduct wireless presentations.

It's not difficult to get a usable image from the PT-LW362 even if you're projecting at an angle or onto a curved surface, thanks to its corner keystone and distortion correction features. For color surfaces like a green board, hue adjustment is available too. The lens has a decent 1.2x zoom ratio. While it doesn't have a throw distance as long as 1.7x zoom projectors like the NEC M323W, you can still easily get a big 100-inch image

3.8m from the screen.

In my tests, the 3,600-lumen-rated PT-LW362 was indeed a very bright projector, though not significantly so compared to most 3,200-lumen 3LCD projectors. As usual, this is only possible in the Dynamic mode, which is the mode we reckon most people would use to combat strong ambient light. Coupled with the Daylight View function, which tries to enhance contrast and details, Arial at 7.5 points looked really crisp and colors punchy. Video performance wasn't too shabby either, with sufficient details and a high-enough contrast. The built-in monaural speaker is nothing to shout about, but at 10W, it was much louder than the tinny 2W ones seen on many competing models.

by Ng Chong Seng

A 55-INCH ANDROID 4K TV FOR THE MASSES

Philips 55PUT6800

AT A GLANCE

Panel Type
LCD

Backlight
Edge LED

OS
Android 5.1

HDMI Inputs
4

Price
$3,299

One side of the bundled remote has a keyboard for easier text entry.

CONCLUSION

Better than average performance, useful features and competitive pricing make this 4K Android TV an excellent choice.

It's clear that the Philips 6800 series TV is a midrange model when looking at price and the fact it sits below the brand's 9000 and 8000 series TVs. However, you'd be hard pressed to tell at first glance with specs like a 700Hz Perfect Motion Rate, four HDMI ports (of which one supports HDCP 2.2), three USB ports, an RJ-45 LAN jack, Wi-Fi Direct and HEVC support, plus a simple, elegant metal swivel stand.

It's also a smart TV running on Android. Official Google Play support opens you up to a rich catalog of apps, especially games; and Google Cast lets you 'cast' (i.e., project) apps on your mobile devices onto the big screen. There's 8GB of built-in storage for apps, expandable by hooking up a USB drive. A dual-core processor keeps the UI snappy for the most part.

A feature on Philips TVs for many years now, Ambilight is back on the 6800. By emitting a glow from both sides of the TV, it attempts to convey the feeling of a wider screen as well as help relax your eyes.

Out of the box, the picture didn't look very bright, mainly because the Standard picture mode is tuned to save energy. Vivid mode made for a much brighter and saturated presentation, but Movie mode was my preference because of its good balance of details and accurate colors. Screen uniformity was good overall, with no obvious dirty screen syndrome.

An LED edge-lit TV, the 6800 utilizes a Micro Dimming Pro system to optimize contrast based on the light conditions in your environment. Basically, it analyzes the picture broken down in 6,400 zones to determine backlight adjustments to make. While I still noticed backlight inconsistency in some scenes, it wasn't too distracting. For a low-cost 4K TV, I'd actually rate its black level performance to be good.

Resolution was also kept high during fast-moving scenes. Natural Motion is Philips' motion enhancement tech for resolving judder, and in my experience, works decently. You may want to turn it off for 24p content however.

If you're shopping for your first 4K TV and aren't willing to pay top dollar, the Philips 6800 series, especially this very competitively priced 55-inch 55PUT6800, is a worthy consideration.

by *Ng Chong Seng*

TESTED & RATED
8.0/10

HWM
SINGAPORE

TAP FOR GALLERY

AT A GLANCE

Display
5-inch 1,920 x 1,080 pixels IPS

Processor
Qualcomm Snapdragon 617 octa-core

Weight
143g

Dimensions
45.75 x 70.8 x 7.26mm

Price
$798 (32GB)

The Fingerprint Sensor doubles as a screen wake-up button and a shortcut to the home screen.

The One A9 comes with HTC BoomSound with Dolby Audio surround technology, but no front-facing speakers.

THE ANDROID 6.0 IPHONE

HTC One A9

The HTC One A9 looks and feels promising for a mid-tier device; it rides on the reputation built around the flagship HTC One M series that helped define Android smartphones back in its time. Physically, the One A9 is quite blatant in adopting the iPhone 6 design language. The rounded corners, the flat metallic rear cover with curving edges and that fingerprint sensor at the bottom bunk are all elements that resemble Apple's device.

Still, we're glad HTC kept the full-metal rear chassis. Adding to its use of premium materials, HTC uses a 'metalmorphics' approach

to evoke a natural look and feel to the phone's finish. Its 5-inch size makes it a very comfortable fit in hand, since you get a display large enough for small on-screen text, yet small enough to fit in one hand. Wielding the One A9 feels like holding a good knife – powerful, sleek and balanced.

The 5-inch, Full HD display (1,920 x 1,080 pixels resolution) gives it a pixel density of 441ppi. It has a warm color temperature profile, which feels easy on the eyes even at higher screen brightness settings. Text displayed on the phone via text-based apps like social media and browsers are clear and sharp too.

It comes preinstalled with Android 6.0 OS Marshmallow out of the box, and it's one of the first few phones to do so after the official Nexus devices. On top of that, the One A9 comes with HTC Sense 7 out of the box - the same version seen on the One M9. We choose to look at it as a positive that HTC loads all the software bells and whistles as their flagship devices. It has the same Sense Home display, BlinkFeed screen for social media, and HTC Themes for skinning your phone with. Functionality-wise, the Fingerprint Sensor is more of a panel that's touch-sensitive, instead of the clickable home button like

on the iPhone. It doubles as a screen wake-up button and a shortcut to the home screen though.

You'll notice that the One A9 features an octa-core Snapdragon 617 - that's a new Qualcomm mid-tier processor that was announced in the second half of 2015 that succeeds the Snapdragon 615. The 617 comes packed with Qualcomm Quick Charge 3.0, although it's crucial to note that the HTC says that the One A9 will only support Quick Charge 3.0 "in the coming months". While its benchmark score is impressive enough to beat even the One M9 in some areas, the One A9 runs at the fluidity that's closer to mid-range quality.

The front camera on the One A9 uses HTC's proprietary UltraPixel camera, while the rear camera has 13-megapixels,

an f/2.0 aperture lens that comes with a sapphire cover, plus optical image stabilization. Despite its mid-range tier, the One A9 won't shortchange you in camera features. Beyond your typical Selfie, Panorama, and Default capturing options, the phone also has a manual mode called Pro that also enables RAW capture. Photos taken appear fine when viewed through the smartphone, but upon closer inspection, it shows how the camera can lack attention to detail.

The One A9 has a battery capacity of 2,150mAh, with support for Quick Charge 2.0 at present (with compatibility for Quick Charge 3.0 in the future as mentioned previously). HTC also claims that the battery can give a 3G talk-time of up to 16 hours. That said, the resulting 7 hour 20 minute battery life derived from our test showed that

HTC hasn't really addressed how power-hungry their phones can be. Against the rest of the Snapdragon 615 smartphones, the One A9 sits somewhere in the middle of the chart. To us, it feels like there's no real battery advantage to bee seen yet from its supposed newer hardware.

As a whole, the smartphone is a good enough mid-tier device. Due diligence was paid to ensure that it has good performance, despite only minor gains over other mid-range smartphones with older hardware. Its greatest flaw is still the mediocre battery life, but the same can be said for other mid-range phones with similar battery capacity sizes. The HTC One A9 also has a very high asking price among mid-range phones of the same caliber, making it tough choice to go for, especially

when you're already going for a mainstream device.

by *Liu Hongzuo*

CONCLUSION

A powerful mid-tier smartphone, for the wrong price.

TESTED & RATED

7.5/10

HWM
SINGAPORE

THE BALANCE BETWEEN QUALITY AND PRICE

Epson WorkForce Pro WF-5621

AT A GLANCE

Features
Print, scan, copy, fax with ADF

Print Speed
20ipm (black and color)

Paper Handling
330 sheets (front and rear)

Interface
USB 2.0, Ethernet, Wi-Fi

Price
$399

You can print directly from a USB memory device or save faxes to it.

CONCLUSION

A durable and duplex-capable all-in-one printer that's priced right.

Epson's WorkForce series color inkjet printers are primarily designed for business, touting features like fast print speeds and reliability, workgroup connectivity, and easy mobile device printing. This recently launched model, the WorkForce Pro WF-5621 stands out for being a multi-function device with additional copy, scan, and fax functions.

A marquee feature on the WF-5621 is PrecisionCore, Epson's latest printhead technology. PrecisionCore first appeared in Epson's commercial systems, but is now being brought to desktop inkjet printers. This is the chief reason for the WF-5621's impressive specs, at least on paper: a print speed of 20ipm for both black and color, plus a top resolution of 4,800 x 1,200 pixels. Other impressive numbers include a first-page-out time of about 7 seconds, and a 45,000-page monthly duty cycle.

Versus the single-function WF-5111 that uses the same print engine and costs just $249, the $399 WF-5621 is considerably more expensive. That said, it does get you a lot more features. Copy, scan, and fax functions aside, the WF-5621 also comes with a 35-page automatic document feeder, and a USB port for direct printing, scanning and saving of faxes with USB memory devices. While both have wired and wireless networking support, only the WF-5621 lets you share your scans via email. Support for LDAP address books and IP address filtering, and the ability to limit user access to certain printer functions are also useful security features to have for an office machine.

Usage-wise, I've hardly any complains. The WF-5621's 3.5-inch color LCD control panel is big and nice, the rear tray handles photo papers well, and the front cassette holds a decent 250 sheets of paper. You can increase the capacity by adding another 250-sheet paper cassette.

Versus its closest rival the Canon Maxify MB5370, the WF-5621 was slightly ahead in color print speeds but slightly behind for mono. If you scan multi-page documents a lot, the duplex-capable ADF is a real time saver; unfortunately, it can't do single-pass scanning. Overall, text looked sharp and colored graphics smooth and clean. The DuraBrite Ultra pigment inks made the printouts impervious to the water and highlighter I threw at them. The ink cartridges that Epson is selling have a high page yield of 4,000 pages in black or color, comparable to toner yields from similarly priced laser printers.

If you print a lot, Epson WorkForce Pro WF-5621 with its high duty cycle and high capacity ink cartridges makes a lot of sense. And Epson's new printhead tech has raised the print speed and quality to a level on a par with Canon's best.

by *Ng Chong Seng*

TESTED & RATED

8.0/10

HWM
SINGAPORE

THE AGE OF THE GAMING NOTEBOOK

Forget everything you think you know about gaming computers.
Today's gaming notebooks are mobile, yet powerful feature-packed
machines that can take on any game thrown at them.

Text by *Kenny Yeo* Art Direction *Ken Koh + Ian Chong*

HERE'S WHY YOU SHOULD GET A GAMING NOTEBOOK OVER A GAMING DESKTOP

Thanks to vast advances in CPU and GPU technology, the days of gaming notebooks being pale shadows of gaming desktops are behind. Today's gaming notebooks are beastly machines with enough firepower and features to rival purpose-built gaming desktops. Let us explain why you should consider a gaming notebook as your next gaming rig.

BRIDGING THE PERFORMANCE GAP

One of the main reasons why gamers shun gaming notebooks for gaming desktops is because of performance. Desktop components always ran quicker. However, this is not the case anymore. Vast advances made recently in the areas of CPU, GPU and storage technology now mean that mobile components are fast bridging the gap in performance. In fact, some notebooks these days are even using the exact same CPU and GPU found in desktops!

Already, we are seeing many mainstream users replacing their desktops with notebooks. And that's because in most real world usage scenarios - web browsing, email, word processing, etc. - a notebook with a decent CPU and SSD storage is going to work just as well as any desktop with comparable desktop-class components.

This isn't just for mainstream usage applications. Even in CPU-intensive applications, the latest mobile CPUs are just as quick as their desktop counterparts. In a test conducted by Anandtech, they found that in extremely CPU-intensive applications, mobile CPUs offered more than 85% the performance of desktop CPUs. Specifically, a Core i7-4700MQ mobile processor which is found in many gaming notebooks launched in the early part of 2015 would score within 15% of a high-end Core i7-4770K desktop processor. On the other hand, a more

powerful Core i7-4900MQ or Core i7-4930MX mobile processor would offer almost similar levels of performance.

Performance aside, today's mobile CPUs even offer the same overclocking features as their desktop counterparts. When Intel launched their new sixth generation "Skylake" processors, one of the new mobile processors in the line-up is the Core i7-6820HK, which is noteworthy because it is Intel's first ever mobile processor to come with an unlocked multiplier for overclocking. This new processor is now being offered in many gaming notebooks for users who demand the absolute best.

But games aren't CPU-intensive, we hear naysayers complain. That's true and that's great because it is on the GPU front that the biggest advances are made. Traditionally, mobile GPUs could only muster about 50% to, at best, 60% the performance of their equivalent desktop counterparts. It's sad, but true. But NVIDIA's latest GeForce GTX 900M series GPUs changed all that. Based on NVIDIA's Maxwell architecture, these new mobile GPUs offer performance that scales very closely with the number of

CUDA cores that they have and are a good match for their desktop counterparts. In our own tests, we found that the high-end GeForce GTX 970M and GeForce GTX 980M offered about 80% the performance of their desktop counterparts, which is a remarkable improvement over older generations of mobile GPUs.

More impressively, NVIDIA recently announced that gaming notebook manufacturers can now cram its desktop GeForce GTX 980 GPU into their systems for the ultimate in mobile gaming performance. It's a remarkable achievement, because for the first time, a desktop GPU part can be found in a notebook. What this really means is that desktop gaming performance has finally come to notebooks, without any compromises or sacrifices. Not surprisingly, major brands like Aorus, ASUS and MSI have all jumped onboard and are offering notebooks outfitted with desktop GeForce GTX 980 GPUs.

Announced at IFA 2015, the ASUS ROG is the first notebook in the world to feature liquid-cooling via a specialized liquid-cooling dock.

BEYOND CPUS AND GPUS

Beyond faster CPUs and GPUs, notebook manufacturers are looking at novel ways of boosting performance and a recent trend that we noted is the increasing use of external graphics docks. These external graphics docks can typically accommodate a wide range of desktop graphics cards and can connect to notebooks to provide a substantial boost to performance. One brand that is pursuing this technology as a way of increasing performance is Alienware, which has made its latest notebooks compatible with its own external graphics dock called the Graphics Amplifier.

Another interesting way to boost performance is swappable modules. We have seen notebooks that have swappable bays that enable users to plug in different modules to achieve different effects. For example, a graphics module for SLI gaming goodness; a battery module for increased battery life; or even a cooling module to keep heat down and improve system performance.

Speaking of keeping heat down and improving performance, one notebook that takes this to the extreme is the ASUS ROG GX700. Announced at IFA 2015, it's the first notebook in the world to feature liquid-cooling via a specialized liquid-cooling dock. Once docked in place, the ROG GX700 is liquid-cooled which allows both the CPU and

GPU to reach even higher clock speeds. And according to ASUS, when the ROG GX700 is liquid-cooled, it can receive a performance boost of at least 20%.

All in all, what we are trying to say is that gaming notebooks are now capable of offering performance and gameplay experiences that will give gaming desktops a run for their money, and should no longer be regarded as a poor relation of their desktop counterparts.

Modular add-ons like this water-cooling kit for the ASUS ROG GX700 allow the notebook to achieve higher performance with its existing components.

The Alienware Graphics Amplifier has its own GPU that can give your notebook desktop-class performance when docked.

CUSTOMIZABILITY AND PORTABILITY

Gaming notebooks have always had one key advantage over gaming desktops and that it is they are portable. If you feel like taking your games out of your room and into the living or maybe the balcony, no problem. If there's an overnight LAN party, no issues there either. Just unplug your notebook and go. You cannot do the same with a desktop.

But the even greater news is that gaming notebooks today have never been more portable. The latest CPUs and GPUs have greatly improved power characteristics - they consume less power and produce less heat. In turn, notebook manufacturers are able to take advantage of this to build thinner and slimmer notebooks. Now, it is entirely possible to find powerful gaming notebooks fitted with high-end GPUs that are only slightly heavier and thicker than Ultrabooks. This trend of ultra slim notebooks began in 2011 with Razer's now iconic Blade notebook, which remains to be one of the thinnest and lightest gaming notebooks you can buy. The 14-inch Razer Blade is just 18mm thick and weighs just 2kg and yet features a high-end GeForce GTX 970M GPU.

Portability aside, gaming notebook manufacturers are now keenly aware of what gamers want and need, and are catering their products to suit their needs. One example of this is the ability to customize notebooks and also the introduction of multiple SKUs to suit different gamers. Brands like ASUS and MSI now offer multiple versions of a single model in an attempt to meet gamers' demands. And on the other hand, some brands like Aftershock offer full customization options, allowing users to specify all the components that they want in their notebook.

More than just customization, gaming notebooks today are also increasingly upgradeable. Most gaming notebooks today are built to allow owners to easily access, upgrade and swap their memory and storage. And some gaming notebooks even utilize what is known as MXM graphics module, which allows owners to upgrade the notebook's GPU when newer models are available - for example from the older GeForce GTX 870M and GeForce GTX 880M to the newer GeForce GTX 970M and GeForce GTX 980M. So like desktops, the usable lifespan of gaming notebooks can be increased. HWM

The new Aorus X5 v5 is only 22.9mm thin, despite packing dual NVIDIA GeForce GTX 965M cards in SLI.

The replaceable MXM graphics module opens up an easy path to upgrades for notebooks like the MSI GT72.

This trend of ultra slim notebooks began in 2011 with Razer's now iconic Blade notebook, which remains to be one of the thinnest and lightest gaming notebooks you can buy...

How to pick a gaming notebook?

CPU

Make sure the notebook features Intel's latest sixth generation Core processors. They can be differentiated by their model number. It should begin with a "6". These new processors feature the best performance and power characteristics. Hardcore users should look out for the overclockable Core i7-6820HK.
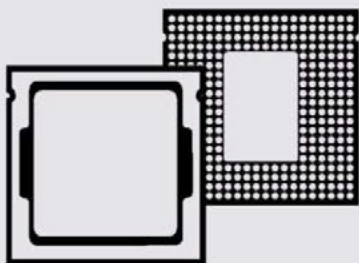
GPU

NVIDIA's mobile GPUs lead the way here and the GeForce GTX 970M offers the most bang per buck. Demanding users should definitely look toward the GeForce GTX 980M or the desktop GeForce GTX 980. These GPUs are available in SLI configurations for even more outrageous gaming performance.
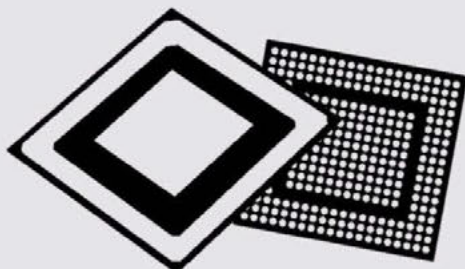
RAM

The latest gaming notebooks powered by Skylake processors use DDR4 memory and 8GB is the bare minimum for a gaming notebook these days. While memory does not directly increase performance, more is always better for smoother running apps. The latest notebooks can handle up to 64GB of RAM.
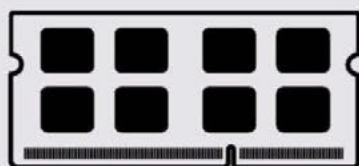
Storage

An SSD is a must-have for any gaming notebook. Even if you do not spec it with the manufacturer, upgrading it on your own is a must especially since SSD prices have fallen so much. Traditional hard disk drives are far too slow and do not take advantage of your fast processor. A SSD won't increase your frame rates, but it will make installations and game loading times significantly shorter.
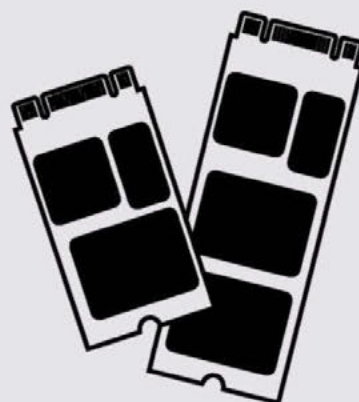
Display

15-inches seem to be the sweet spot for most users and it offers an expansive enough viewing area for a better gaming experience. As for resolution, Full HD should be the bare minimum these days. Higher resolutions are welcome, but it will come at the cost of lower gaming frame rates. NVIDIA G-Sync is also a helpful option as it is especially useful in reducing lag and stutter.

A VISION OF CLARITY

A new family of lenses designed for the modern, high-resolution camera.

THE ZEISS MILVUS FAMILY OF SLR LENSES

The new ZEISS Milvus family of manual focus SLR lenses has been designed with optimal image quality for the modern, high-resolution DSLR camera. From portraiture to wide-angle landscapes to filmmaking, the Milvus lenses reveal fine micro-contrast in the tiniest details, with nine-bladed apertures for harmonious *bokeh*.

The lenses are practically distortion-free, with exceptional reflection, ghosting, flaring and shading reduction, due to T* anti-reflective coating from ZEISS. All Milvus lenses compensate for chromatic aberrations at different distance settings, ensuring that objects in front of and behind the focal plane are captured virtually without color fringes.

Practical, rubber-covered focus rings provide outstanding grip, with long rotation angles for precise manual focusing. A 'de-click' function in the ZF.2 mount's aperture ring allows the lenses to be used either with clicks or without clicks, letting filmmakers adjust aperture freely and smoothly while shooting.

The Milvus lens family is built to last, with robust, all-metal barrels for years of reliable use. They are protected against dust and spray water, and a tough metal lens shade comes standard with all ZEISS Milvus lenses.

The ZEISS Milvus family encompasses six focal lengths with ZE or ZF.2 mounts for Canon and Nikon DSLR cameras, and is available via an additional adapter for the Sony a7 series of cameras. It initially consists of the following six focal lengths: ZEISS Milvus 2.8/21, ZEISS Milvus 2/35, ZEISS Milvus 1.4/50, ZEISS Milvus 1.4/85, as well as the two macro lenses ZEISS Milvus 2/50M and ZEISS Milvus 2/100M. More focal lengths will be added over the next few years.

To find out more about Zeiss Lenses, go to **http://www.zeiss.com/photo**

THE RETURN OF BLACKBERRY

The evolution of the smartphone market pushes tech firms to invent novel yet compatible devices that combines the best of their fields to win the competition. Having handy technology can only go so far, since the user needs to understand how to work it to their advantage. Here, we learn about how BlackBerry maximizes the Android-powered BlackBerry Priv to bring out the best of Google's highly customizable software against their security expertise.

Text by *Liu Hongzuo*

MORE INSIDE >
- OVERCLOCKING SKYLAKE NOTEBOOKS
- CAPTURING YOURSELF IN PARTY PICS
- TOP 3 NEW FEATURES IN IOS 9.3

WORKING SMART AND PLAYING HARD WITH PRIV

The latest BlackBerry smartphone uses an Android 5.1 (Lollipop) OS instead of their proprietary software and app store. This was a generally seen as a welcome yet problematic change to BlackBerry's mobile lineup, going by how the OS is now something more accessible with a thriving app ecosystem, juxtaposed against the lowered sense of security which was also BlackBerry's biggest selling factor. Anticipating this line of thought, the company and its phone makers implemented a few key features from their original BB10 OS to showcase their capabilities, manage the public's expectations, as well as to adhere to their mantra of security above everything else. Without further ado, we look at some BlackBerry features that's made better with Android OS.

DTEK BY BLACKBERRY

With Android 5.1 OS as its base, BlackBerry creates a clever security workaround for its Priv. DTEK (pronounced "detect") is a monitoring app that gives you the tracking capabilities without meddling with the default permission settings on your Android smartphone. The app simply notifies the user whenever other specific apps or games access a particular item, or feature. It goes further by keeping a simple log of each app, followed by a list that indicates the duration and number of times a particular app used your camera, contacts, location, microphone, text message, or video functions.

On the user's end, all they need is a little vigilance and some common sense – if you see DTEK saying that flashlight app accessing your photos or text messages without your explicit permission, you'd know something is off, and you'd be able to hit your settings to alter or remove the intrusive app.

SECURITY UNDER-THE-HOOD

While this requires little to no action on your part, it's still important to know what other steps BlackBerry has taken in order to keep your Android-based Priv secure.

First off, Priv has something called Hardware Root of Trust –a unique manufacturing process that injects cryptographic keys into the device hardware, providing a secure foundation for the entire Android platform. Following that is a Verified Boot and Secure Bootchain, which uses the embedded keys to verify every layer of the device from hardware to Android OS to applications in order to make sure they haven't been tampered with. Wrapping it is a full-disk encryption.

Wait, if all this is possible, why didn't Google include encryption prior to BlackBerry's solution?

Dave Kleidermacher, BlackBerry's chief security officer, explained in a Venturebeat article about BlackBerry's under-the-hood security and why it offers a little more than what Android OS could. We paraphrase what he said that gets the essence of BlackBerry's superiority in security and why it's possible with the Priv.

"The algorithm for measuring authenticity, for example, you don't want to run on (older) Android OSes. Google, really from Lollipop, started to maximally leverage what they call the trust-execution environment…it's a trusted area to run and store critical things like encryption keys, so that they are better protected than if, say, they were stored on the Android file system. Being able to do that was made easier."

It sounds like marketing speak, but it saying that their own security measures are better and deeper than what tech-giant Google offered (until Lollipop came along) on-record is a good indicator of the work poured into securing the Priv for user privacy.
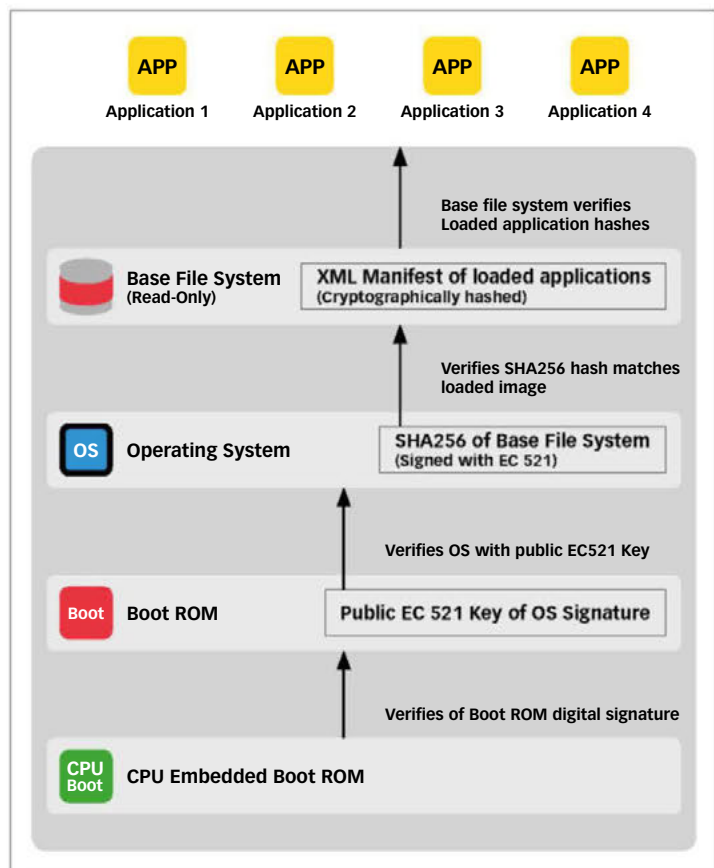
SHORTCUTS

What's the use security without the convenience of getting information at a drop of a hat? That's where the Android customization helps. The Priv took some of its BB10 OS ingenuity for managing a user's work schedule, and evolved it into something a little more accessible for users familiar with Android. Customizable BlackBerry Pop-up Widgets display in-app information from an app on your home screen, after you swipe up (or down or across) the icon. This way, you still have the same previewing convenience without the likelihood of showing sensitive information to wandering eyes. Swiping up from the bottom edge of the screen will allow you to quickly open BlackBerry Hub, Device Search, or Google Now. The cherry on top of the swiping cake would be the curved glass on the side of the Priv, where you can customize the shortcuts to bring you information or notifications, even when the phone is at rest.

The curved glass is customizable, allowing access to chosen apps when the phone is locked.
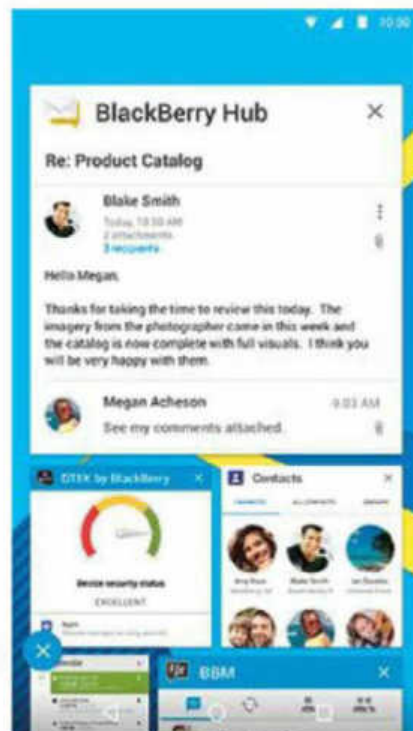
BLACKBERRY HUB AND INTELLIGENT CALENDAR

Not forgetting the mainstay of BlackBerry, Priv users can enjoy BB10's BlackBerry Hub and Intelligent Calendar too. BlackBerry Hub compiles all your messaging-related apps into one scrolling list, so that you don't have to hop in to multiple platforms just to suss out one important bit of information across all your sources. Emails, calls, text messages, and social media posts are all in on the Hub. Intelligent Calendar does the same compilation tricks across different calendar types, all while integrating functions such as Join Now buttons for conference calls, highlighting conflicting meetings, and even suggesting who to invite based on existing events. Our favorite is the ability to send an automated "I'm running late" message from the Intelligent Calendar itself.
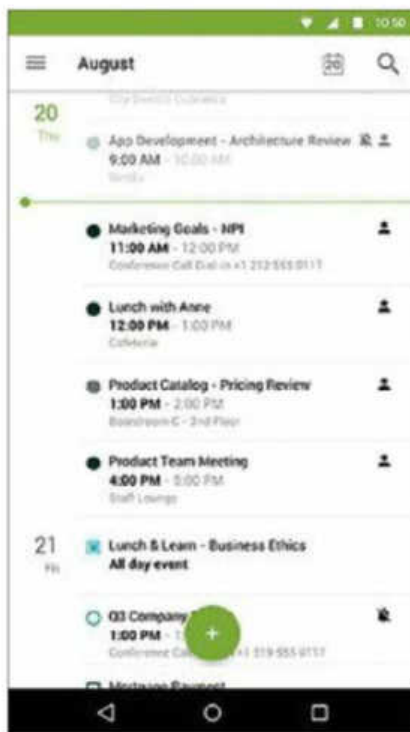
Plan ahead and invite the right people at a glance, with the Intelligent Calendar that organises your schedule.
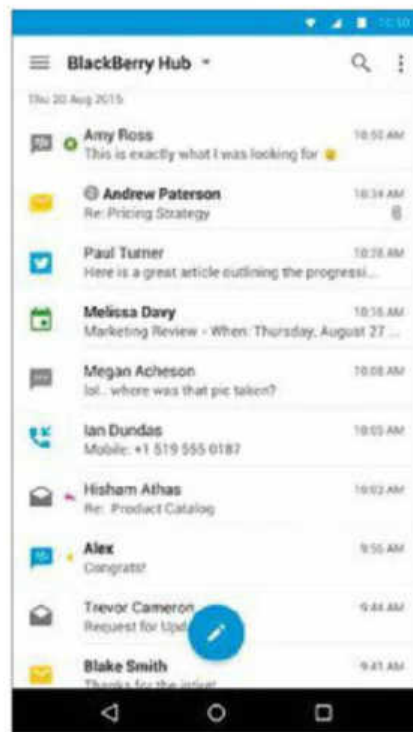
BlackBerry Hub is also available here, so messages from numerous different apps are all in one accessible place.

GETTING INTO YOUR OWN PARTY PICS

How to get your freestyle on with the Casio EX-FR100.

by *Zachary Chan*

Parties — be it the social event where people get together in celebration or a group of people embarking on a mutual quest of outdoors adventure — are great opportunities to capture keepsake moments, with the one exception: the official chronicler (or in our times, the photographer) is almost always left out. Of course, if you're smart about it and armed with the right camera, that doesn't always have to be the case. Here're how you can shoot your yourself, your party and everything in between with a modular freestyle camera.

I-FIE, YOU-FIE, WE-FIE

Smartphone cameras have come a long way, but it is perhaps most notable for popularizing the photography style known as the selfie. Personal portraits aren't anything new, but whenever you see the telltale signs of an outstretched hand, the awkward angle and framing, you know you're looking at a mobile selfie. Now, we have nothing against smartphones. They're handy to have around, and we shoot selfies all the time.

However, they won't do justice if you're trying to get that all-inclusive party shot, or 'wefie'. Shooting group photos with your smartphone while trying to frame yourself in the picture is no easy task, since everyone else can look natural, but you're stuck awkwardly in the center, trying not to continuously look like a deer in headlights while you have your hands outstretched fiddling with a touchscreen. Normally, you'll end up with everyone squeezing uncomfortably together, with yourself blocking almost any background scenery because of the narrow field of view of smartphone cameras.

One way to get a better wefie is to invest in a good selfie stick. One that preferably has remote trigger controls. An even better method is to also invest in a modular camera designed for such tasks, such as the Casio EX-FR100. It's small, lightweight, with a detachable lens and body for greater control.
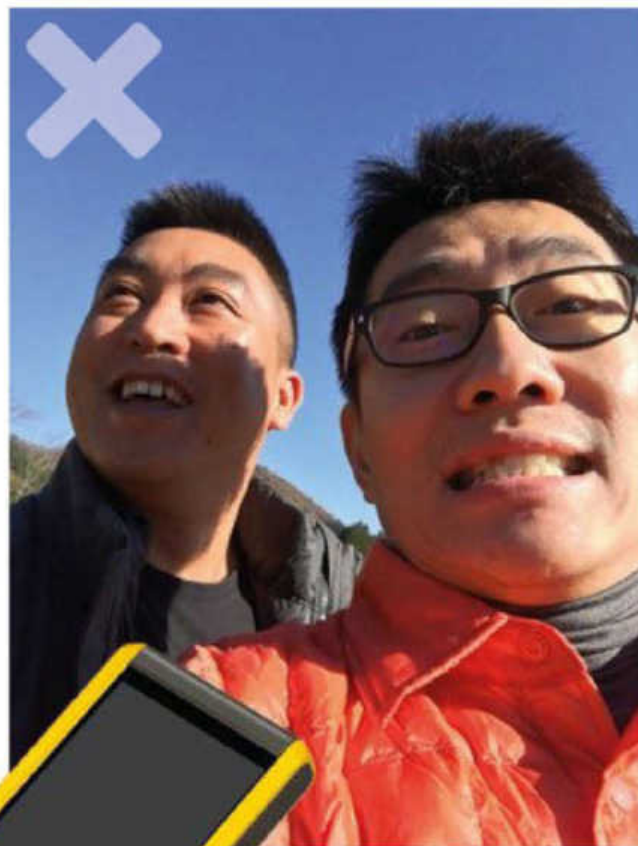
Here's a typical smartphone wefie. Your hands are never long enough to get the right distance or focal length. You usually end up occupying the entire frame, obscuring the scenery that prompted you to take the photo in the first place.
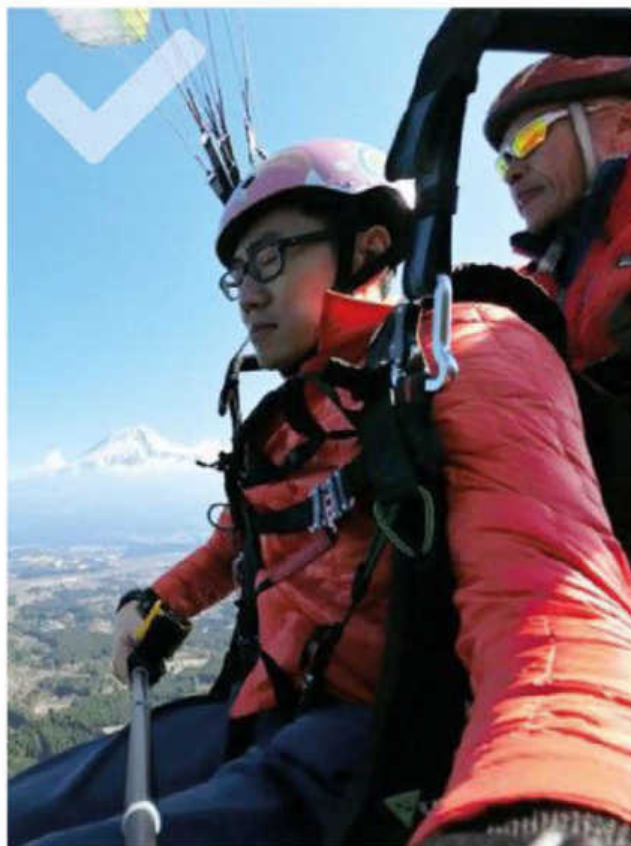
Be smart, use a selfie stick you can secure to your wrist. The Casio EX-FR100 lets you keep the control unit close at hand, freeing yourself up to maneuver the lens any which way. We shot this even with our eyes closed.

THE ULTIMATE POV

When you look through your camera viewfinder or LCD, you are seeing what your camera sees. What if you can make your camera see what you see instead? It may be a semantic distiction, but there is a difference between framing and posing for a photo and shooting a natural point-of-view (POV). This is the reason that action cameras have become so popular these days. POV videos allow us to experience death defying stunts or see what professional athletes see in the heat of the action.

Our own adventures might not be so much of an adrenaline rush of course; it could be a family camping trip or a trail walk through the woods. For this purpose, you don't really need an action camera,

most of which are fitted with fish-eye lenses that warp perspective to highlight action.

The Casio EX-FR100 shoots still photos instead so you can show your friends the kind of sights from your perspective. Of course, it also takes Full HD video with built-in image stabilization so it can double up as an action cam when needed. You can also take advantage of its quick release system that allows you to easily adjust and repurpose the lens in case you want a quick selfie without disruption to your activity. Everything is captured in an ultra-wide angle 16mm (35mm equivalent) F2.8 lens designed for minimal distortion.

Some activities just aren't meant for you have fun and hold on to a camera at the same time. You can always ask a friend to shoot you in action, but it just doesn't convey the same mood as a POV photo or video.

Action cams are great forextreme sports, but are not designed for everyday photography. The EX-FR100 on the other hand can shoot sweet POV footage in either high-resolution 12MP stills or motion-compensated Full HD video.

BY HOOK OR BY CROOK

Ok, maybe you're not really the adventurous kind. Maybe you just want a cozy sit down dinner with friends. More importantly, you want to enjoy said dinner without needing to constantly whip out a camera for some food photography or mood shots. You may be the designated photographer, but why do you have to be left out of the festivities because you're too busy thinking about angles or moments.

What if you had a camera that could very well attach to just about any surface in the room with free play on shooting angles? Not only that, you don't have to worry about positioning or shooting because you can remotely monitor a live feed or conveniently just set the

camera to shoot both stills and videos automatically, then retrieve the camera at the end of the night? Well, actually you can.

The Casio EX-FR100 features clips and accessories that can secure the camera to a table or the ceiling if you so wish. Its modular design also allows you to fashion impromptu attachments from hooks or crevices, somewhat like the MacGyver of photography. After that, you simply enable the camera's automatic Intelligent Interval shooting mode and let it do its thing. But, since you always have the remote module with you, you can also snap a manual shot even when Interval mode is in effect. All without leaving your spot in the party.

You're out camping with your friends on a late Autumn night. You don't really want to be roasting marshmallows on one hand and trying to balance a camera or a selfie stick on the other. You could, but you really don't want to.

With a detachable design, you can easily secure the lens to any surface such as a crevice in the ceiling panel. You can then manually trigger the camera for wide angle candid shots or leave it to shoot automatically and create a cool time lapse video at the end of the night.

HOW-TO OVERCLOCK YOUR INTEL CORE I7-6820HK LAPTOP

by *Koh Wanzi*
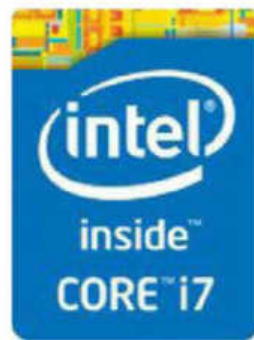
With Intel's sixth-generation Skylake processors, overclocking is no longer the prerogative of unlocked desktop CPUs. The Intel Core i7-6820HK processor is the first overclockable mobile processor from Intel. For the adventurous, this means free performance with just a handful of tweaks using the right software utility.

With a maximum Turbo frequency of 3.6GHz, the new chip can be overclocked to rival even the desktop Core i7-6700K processor. But seeing as overclocking headroom is heavily dependent on maintaining chilly temperatures, manufacturers have considerable freedom to potentially unlock more performance by implementing more powerful cooling mechanisms.

That brings us to the ASUS ROG GX700, one of the first laptops to include the new processor, and – wait for it – liquid-cooling capabilities. On top of that, the GX700 is equipped with an NVIDIA GeForce GTX 980 desktop graphics card, shrunk down to fit in a notebook.

As it turns out, overclocking on the GX700 is remarkably straightforward because plugging the notebook into its dock automatically boosts the CPU multiplier to 40, which allows it to ramp up to 4.0GHz – a huge boost over its base frequency of 2.7GHz.

Nevertheless, because not all laptops that will eventually feature the new processor will come with their own overclocking docks or apps, we'll show you how to overclock the chip using Intel's Extreme Tuning Utility (XTU). The utility can be downloaded from Intel's website. However, do note that you probably won't be able to achieve as high an overclock on other laptops without special features like the GX700's water-cooling.

Disclaimer: Just like overclocking desktop CPUs, overclocking your notebook CPU is performed at your own risk. If you're not comfortable with the utility or potentially frying your notebook and voiding your warranty, do NOT continue.

The ASUS ROG GX700's liquid-cooling dock lets you push the overclockable mobile processor to its limits.

1. INCREASE PROCESSOR CORE RATIO

Intel XTU provides varying levels of control over your overclock, so you can quickly achieve a light boost, or tinker around if you're feeling adventurous. The Basic Tuning panel is the fastest and easiest way to overclock the CPU. Your primary concern is the Processor Core Ratio option, which corresponds to the 2.7GHz default base frequency. You'll want to adjust the slider in gradual increments so you can isolate the stable setting for your chip.
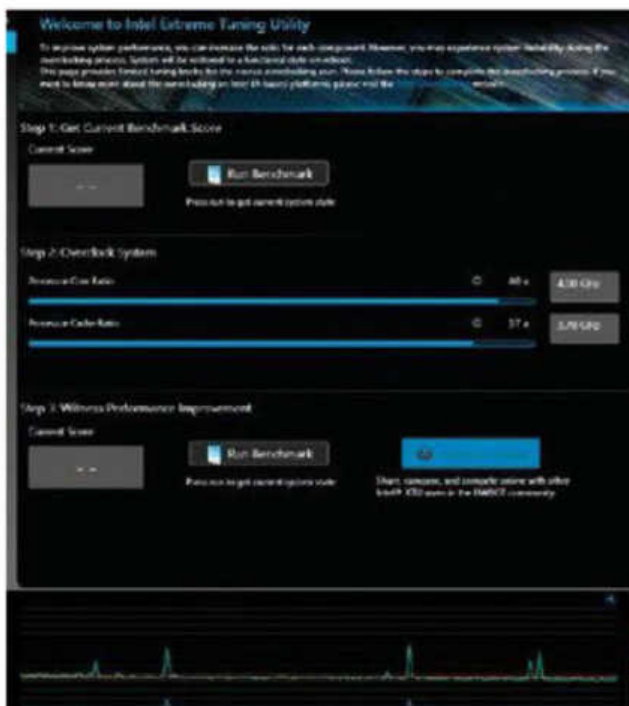
You'll want to tweak mainly the Processor Core Ratio.

2. ADJUST THE CPU BASE CLOCK

The Advanced Tuning tab offers you control over additional parameters, most notably the CPU base clock, or reference clock as it is referred to in the utility. The reference clock is tied to the CPU multiplier (Processor Core Ratio in Basic Tuning), and the final clock speed is achieved by multiplying the reference clock by the multiplier. For instance, if the reference clock is kept at the default 100MHz, setting the multiplier at 40 would mean a final clock of 4.0GHz. One advantage of changing the reference clock is that it allows you to increase the overall clock speed in finer increments. If your system was failing the stability tests at 3.9GHz but was doing fine at 3.8GHz,

you'd be stuck at the latter speed, without knowing if you could actually reach a higher value between the two speeds.

By adding reference clock tweaking to your overclocking tool belt, you can now begin to test the actual limits of your CPU. It's then a matter of some simple math to find the right value combinations to achieve the clock speed you want to test out.

However, because the reference clock is tied to other values throughout the system like memory speeds, increasing it could possibly introduce other instabilities that would make it difficult to single out the cause of crashes. As a result, we'd recommend being extremely conservative in your base clock tweaks – no more than a few MHz above default, especially if your notebook isn't a water-cooled beast like the GX700.

3. INCREASE THE VOLTAGE

You may also need to increase the default voltages while overclocking. Sometimes a voltage boost is what is needed to make an overclock stable, but you'll want to do this in tiny 0.05V increments. Playing around with voltages is always risky, and we wouldn't exceed an upper limit of 1.35V.

The Advanced Tuning panel lets you change things like the reference clock and voltages.

4. STRESS TEST THE CPU

We use Cinebench R15 as a quick way to test the stability of an overclock. It stresses all the CPU cores, so if your overclock isn't stable, your notebook will most likely freeze or restart. Intel XTU also comes with a built-in stress test that works better for assessing long-term stability. Just check the box for the CPU Stress Test and select the duration for which you want to run the test (the longest possible is a whopping 30 days). If you think you've hit a stable value, you may want to set it to run for an hour for starters.
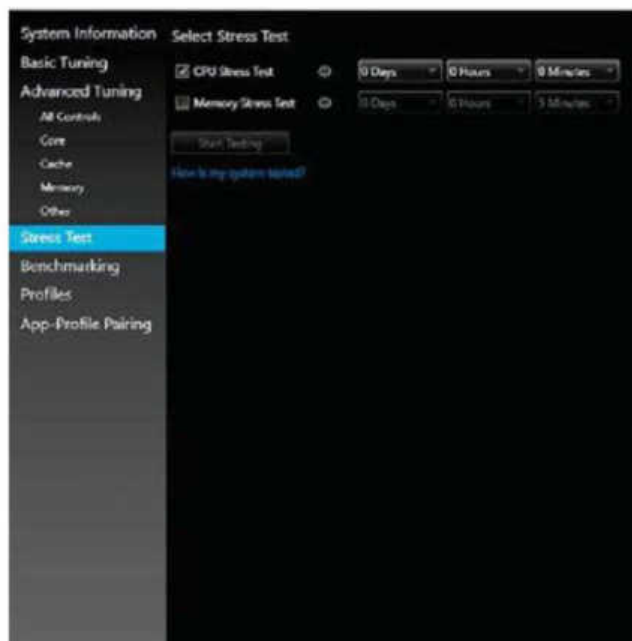
The CPU Stress Test will come in handy for assessing long-term stability. Overclocking is an art more than a science, and it is often a felicitous combination of trial and error and sheer luck that helps you squeeze the most out of your CPU.
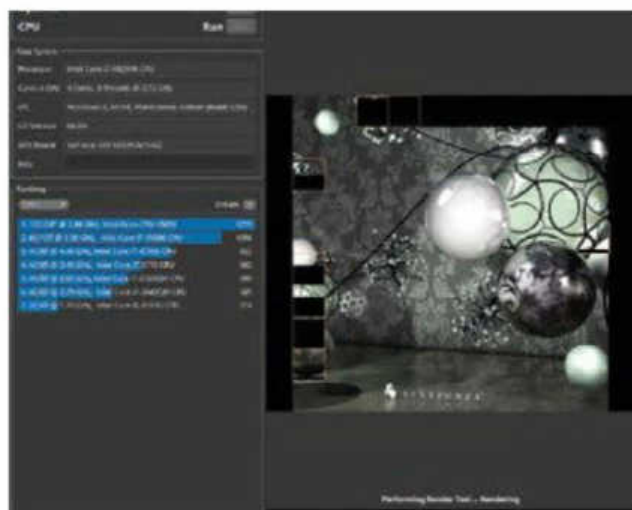
Cinebench R15 is an easy and quick way to test if your overclock is stable.

HOW-TO: EMBED SECRET MESSAGES INTO DATA FILES

by *Salehuddin Husin*

TOP SECRET

With all the spying and hacking nowadays, you can be sure nothing you do online is truly secure. Big Brother is always watching you. If you're still on a spy high from our last issue, we've got more nifty tricks to show you, such as storing messages within image and music files.

EMBED MESSAGES INTO IMAGES

If movies have taught us anything, it's that every rich person has a safe hidden behind a painting. That's the offline version; we're going to show you how to do it on your computer.

First, you'll need to create a blank Notepad file. Fill it with whatever info you want to keep out of prying eyes and then save it. Name it anything you want, but make sure it's easy to remember.

Next, you'll need an image file. It can be any image, so just get one that's not going to arouse suspicion and label it something innocuous. Make sure it's in .jpg format as well.

Now here's where it gets a bit tricky. You'll need to open a command prompt. To do that, got to the Start menu, click on Run and then type 'CMD' in the box that appears and hit the Enter key. Done right it'll open the command prompt. Once the prompt appears,

type in cd desktop, which should make the prompt look in your desktop directory. Once done, type the following command.
Copy /b image.jpg + msg.txt hiddenmsg.jpg

Make sure to swap in the correct file names for the picture (image.jpg) and the text file (msg.txt). For example, if your image is called hwm, then in the command line you'll need to type hwm.jpg instead of image.jpg.

If you've done everything right, the command will create another new .jpg file, called hiddenmsg (or whatever you chose to name it). It's now safe to delete the original image and text files, as they've both been combined in hiddenmsg.

To check your message, open the file in Notepad and scroll right to the end of the gibberish. That's where your message will be.

C:\ Command Prompt

```
Microsoft Windows [Version 10.0.10586]
(c) 2015 Microsoft Corporation. All rights reserved.

c:\Users\GS60>cd desktop

c:\Users\GS60\Desktop>copy /b image.jpg + msg.txt hiddenmsg.jpg
```

EMBED MESSAGES INTO MUSIC

Much of the process for embedded files into music remains the same as embedding messages into images.

But instead of a text message this time around, we'll be embedding a .zip file. This method also works on an image file, so you can switch the methods around.

First off, you'll need two things; an mp3 file and a zip archive. Let's call the mp3 file "music", the zip file "message" and the

combined file "secret" for this example. Now open the command prompt and type this: **Copy music.mp3 /b + message.zip /b secret.mp3**

The commands basically append your zip archive with the music file. If you open the file with an audio player, it'll play the music of the .mp3 file but if you use a zip extraction utility like Winrar or Winzip, you'll find that it turns into an extractable archive.

C:\ Command Prompt

```
Microsoft Windows [Version 10.0.10586]
(c) 2015 Microsoft Corporation. All rights reserved.

c:\Users\GS60>cd desktop

c:\Users\GS60\Desktop>copy music.mp3 /b + message.zip /b secret.mp3
```

ILLUSTRATIONS IAN CHONG

THREE THINGS IN IOS 9.3 YOU NEED TO KNOW

by *Ng Chong Seng*

In the middle of January, Apple released a beta version of iOS 9.3 for the iPhone and iPad. While no firm release date is announced, a page on Apple's website (www.apple.com/ios/preview) did surface to introduce some of its key features. Here are three that excite us.

TOUCH ID SUPPORT IN THE NOTES APP

Apple has drastically improved the native note-taking app in iOS 9, and is continuing to build on it in iOS 9.3. Soon you'll be able to secure all your notes with a password or fingerprint. There's also better sorting based on creation date, modified date, or alphabetical order. Hopefully, this is a sign of system-wide Touch ID support coming. For instance, it'd be even better if we could choose to lock an app on our end without having to wait for the app developer to implement it.

NIGHT SHIFT

Studies have shown that looking at bright blue light in the evening can mess up your circadian rhythms and make it harder to fall asleep. Night Shift uses geolocation data and your local clock to determine when the sun sets in your area, and automatically shifts your iOS device's display's colors to a warmer spectrum. And when morning comes, the colors will return to its normal state. During initial use, the display may look very orange-y, but your eyes should get use to it after a while.
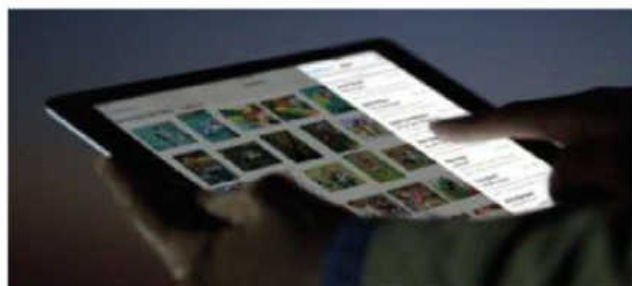
SHARED IPAD

Several important improvements are coming to the iPad to make it more useful for classroom use. For example, there's a new Shared iPad protocol for schools that use iPads, but which simply can't afford to have one tablet for each student. With Shared iPad, a student can log in to any iPad, and have their personal content on it. For teachers, there's a new Classroom app that allows them to check on their students' progress, launch a specific app, website, or page in a textbook on every iPad in class, share students' work on the big screen via AirPlay, and more.

THE BIG SCREEN ON A SMALL SCREEN

by *Liu Hongzuo*

Legitimate video streaming services on smartphones sound quite impossible, given the tight rein from content makers, distributors, and censorship. Well, not anymore. Watch your favorite shows with these recommendations, bringing high quality content within the boundaries of legal limits, yet packed with true couch-potato experience.

NETFLIX
iOS, Android
Subscription-based plans

Netflix is officially available almost worldwide so if you aren't already rocking a Netflix subscription by now, it should be the very next thing you do. But why get the app when streaming would certainly bust your mobile data cap? That's because the app is much more than watching – not only does it share a similar interface with the desktop, you could also use the time spent waiting for public transport or tardy people to bookmark more stuff for the late-night Netflix-binge. If you're in place with free Wi-Fi, yippee. The app also allows you to cast your show onto a television (if you have the correct accessories, like Chromecast).
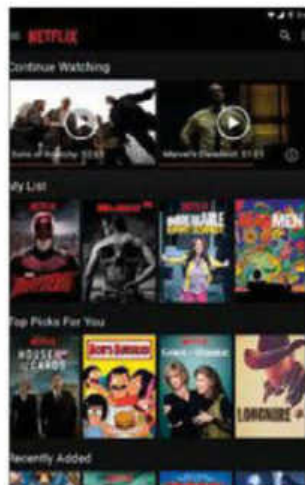
Bookmark, browse, and explore the ever-expanding catalog, even if mobile data streaming isn't for you.

VIU
iOS, Android
Free

This could be considered a gift to Korean drama-serial chasers. Viu is an app that streams Korean shows of diverse genres, fully subtitled in English or Mandarin, within eight hours of the episode airing in its home country. What's even more mind-blowing is the ability to watch, free-of-charge, without the need for an account (though having one would certainly help you keep track of what you've covered and liked). The only catch is the single advertisement before each episode, but the quality and intuitive app experience is a very good for some Hallyu fanaticism delivered to your fingertips.

Free subtitled Korean dramas updated within eight hours of broadcast? What sorcery is this?

IFLIX
iOS, Android
Subscription-based plans

Moving a little closer to home, you'll find Malaysian-grown iflix, which also stores a wonderful catalog of shows, including the ones Netflix didn't have during its Asia-Pacific launch. For just RM8 (~$2.60) per month, you get access to more than 10,000 hours worth of content, plus the ability to download episodes with a Wi-Fi connection for offline viewing when you're on public transport. They release episodes that are also airing on the same day. Sadly, iflix is only available to some SEA countries - Malaysia, Philippines and Thailand – for now, but they are working to include more countries in the region.
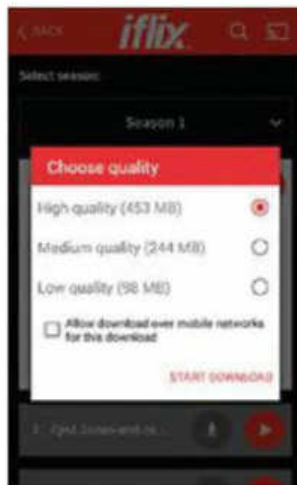
The option to download shows for offline viewing is a tantalizing feature, no doubt.

CRUNCHYROLL
iOS, Android, Windows Phone
Subscription-based plans

Yes, streaming of Western and Korean content is nice, but what about anime lovers? There's Crunchyroll. A site that originally started by streaming unlicensed anime episodes has since cleaned up their act, providing top-tier content in high quality over browser and smartphone apps. Membership is just US$6.95 per month, granting you full access to their 20,000 titles of 1080p HD episodes in anime and Japanese drama serials, and mangas. The membership ensures zero advertisements, as well as Simulcast and Simulpub - allowing subscribers to watch and read Japanese content within the first hour of original broadcast.
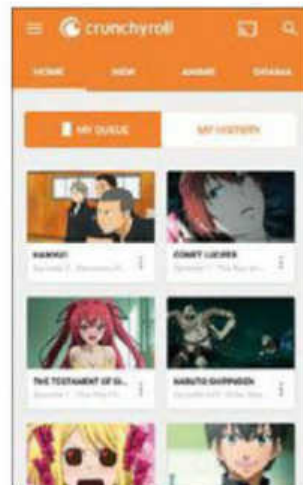
Get a glance of your favorite anime series with Crunchyroll's clean and simple app client.

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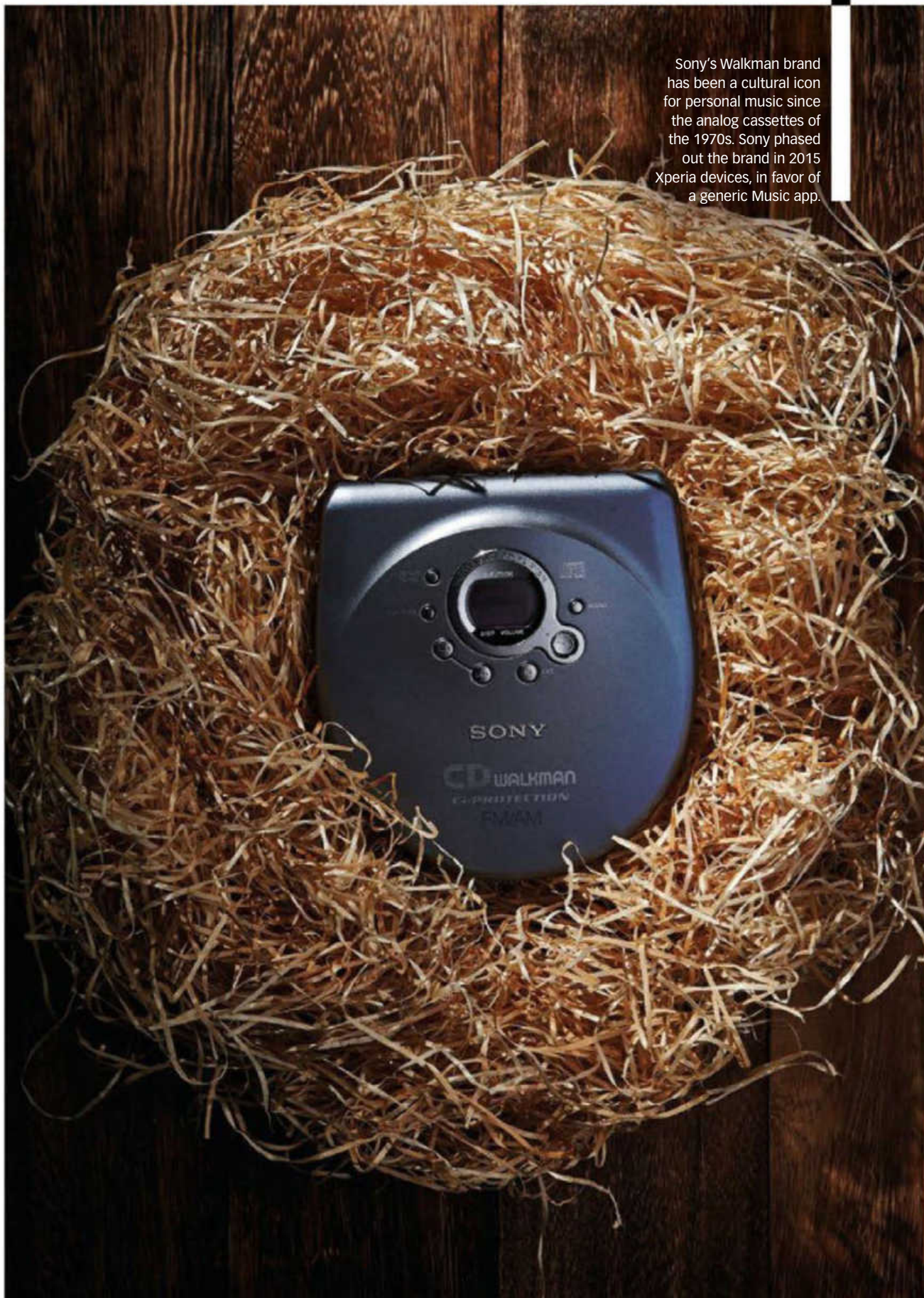
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Sony's Walkman brand has been a cultural icon for personal music since the analog cassettes of the 1970s. Sony phased out the brand in 2015 Xperia devices, in favor of a generic Music app.

SONY

CD WALKMAN

G-PROTECTION

FM/AM